

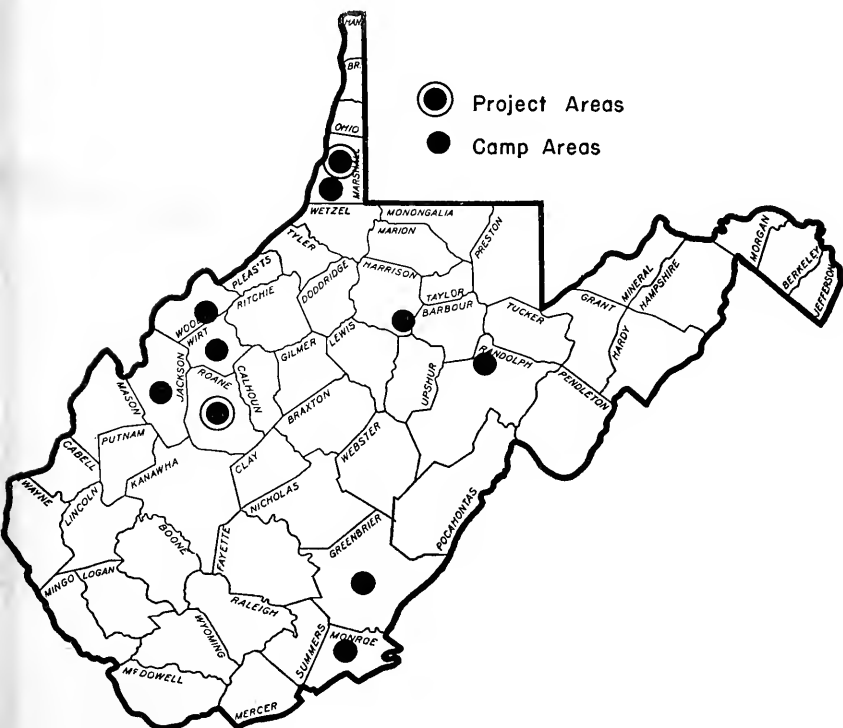
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Certain Economic Aspects of Agriculture in the Jackson County Soil-Conservation Area

by E. C. WEITZELL



Location of Demonstration Projects of Soil Conservation in West Virginia

AGRICULTURAL EXPERIMENT STATION
COLLEGE OF AGRICULTURE, FORESTRY, AND HOME ECONOMICS
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TABLE OF CONTENTS

	Page
Objectives of Study	4
Description of the Jackson Demonstration Area	4
Location	4
Topography	4
Soils	6
Climate	7
Land Classification	8
Social Aspects of Farm Families	8
Age of Farmers	8
Background of Farmers	9
Farm Families	9
Conditions Affecting Social and Economic Planning	9
Agricultural Production	10
Size of Farms	10
Investment	11
The Character of Farming	12
Land Use	12
Farm Practices	14
Crops	14
Erosion Resistance of Crops	15
Crop Yields	16
Pasture Capacities	17
Crop Sales	18
Livestock	19
Animal Units	19
Livestock Inventory	20
Livestock Purchases and Sales	20
Livestock Products	21
Miscellaneous Farm Income	22
Non-Agricultural Income	22
Total Farm Receipts	23
Farm Expenses	24
Farm Business Summary	25
Types of Farming	26
General Farms	29
Size of Business	30
Efficiency of Operation	32
Organization and Combination of Enterprises	33
Specialized Beef-Cattle Farms	35
Size of Business	35
Efficiency of Operation	36
Organization and Combination of Enterprises	37
Conclusion for Beef-Cattle Farms	38
Self-Sufficing Farms	39
Size of Business	39
Organization of Farms	40
Yields and Production	40
Expenses and Income	41
Poultry Farms	43
Part-Time Farms	44
Dairy Farms	46
The Program of Soil Conservation in the Jackson Area	47
(1) Pasture Improvement	47
(2) Yield Improvement	48
(3) Improvement and Conservation of Soil Fertility	48
(4) Lime and Fertilizer	49
(5) Farm Organization and Management	49
(6) Vegetation and Cover	49
(7) Engineering	49
(8) Forest Plantings	50
Farm Planning	50
Summary	51
Appendix	53

Certain Economic Aspects of Agriculture in the Jackson County Soil-Conservation Area

by E. C. WEITZELL¹

THE USE OF LAND in West Virginia presents many problems. Practically one-fourth of the population depends directly on agriculture for a livelihood, while the remaining three-fourths must receive its food supply from this or other states. Mining, lumbering, and industry in the past have contributed the major proportion of the income. As these resources were depleted, an increasing proportion of the population has turned to the soil for a larger amount of its livelihood.

Land suitable for the most efficient crop production is limited to small areas of limestone, sedimentary, and residual soils of lesser slopes. Hence more food is necessary to support the population than can be produced on these limited areas. As a result, crops are being grown on steeply-sloping land that erodes rapidly under comparatively intensive cultivation. Soil depletion and low crop yields follow.

In general, farmers have been very slow to solve the problems of soil management that accompany hill farming. There has been practically no attempt to effect management practices that would conserve and prolong a large part of the original productive capacity of the hillside soils. Consequently, erosion and depletion of essential production elements have been responsible for the abandonment of much originally good hillside land. One generation has been known to clear the land of forest, "wear out," and abandon two or more farms. Depleted crop land often has been diverted to low quality pasture or it has been abandoned to brush and second-growth timber.

Such exploitative procedure was possible in the past. New land for farming is now scarce. Attention must be given to conserving and maintaining land already cleared. Many social and economic considerations are basic to the correct planning of a long-time program of land conservation.

¹Assistant Agricultural Economist, Department of Agricultural Economics, West Virginia University; The Research Division, Soil Conservation Service; and the Bureau of Agricultural Economics, United States Department of Agriculture, cooperating.

ACKNOWLEDGMENT: The author wishes to acknowledge the diligent clerical assistance rendered by Gertrude A. Lucas and L. E. Darrah. The cooperation of the farmers of Jackson County and of the members of the operations staff of the Soil Conservation Service is appreciated.

Objectives of Study

In connection with the operations of the Soil Conservation Service, the research division was established to obtain facts and to develop relationships in the field of soil and water conservation. In this work the West Virginia Agricultural Experiment Station is cooperating with the Bureau of Agricultural Economics and the Soil Conservation Service, United States Department of Agriculture.

The present project was established in 1936 to study the effects of the program of soil conservation on farms in the demonstration areas. The project was designed to obtain labor income and farm practice records on the farms in each successive year for a five-year period, so that the progress and benefits of the program could be measured.

This report is intended to portray basic agricultural conditions prior to the introduction of the conservation program and through the first year of its operation. The data included in this report cover the two-year period from June 1, 1935, to June 1, 1937, and are issued as a progress statement of the five-year study.

Description of the Jackson Demonstration Area

Location

The Jackson area embodies a large portion of Jackson County, including practically all of its agricultural area, with the exception of the river bottoms in the northwestern part (Fig. 1). This Soil Conservation Service demonstration area is known in the Service as S.C.S. W.Va.-6, with headquarters at Ripley.² The work in this area is administered by the staff of Project I at Spencer, West Virginia where central administration is maintained for the project and two camp areas.

The location of the 187 farms studied in the Jackson Area is shown in Fig. 1. They are well distributed throughout the immediate area now served by the demonstration work. Farms studied include those placed under cooperative agreements with the Soil Conservation Service, together with farms not under agreements. The latter will serve as a check and also denote the tendency for the average farmer to acquire and use the practices employed by farms on which agreements and plans have been definitely worked out by the Service.

Topography

The topography of the land in farms is not unlike that in many other sections of the state. More than half of the land included in this study has a slope of 25 to 40%, and about one-fifth of the area has a slope of more than 40%. The remainder is about equally divided

²This demonstrational work in soil conservation is accomplished with the aid of labor and other assistance made available by the Civilian Conservation Corps.

between slope classes of 0-12% and 12-25%.³ At present the latter classes constitute the majority of the crop land, such land being located along the numerous streams of the area and in the narrow valleys. In the past, much of the land of 40% slope or less was used for general farm production; but because of a great decrease in the productivity

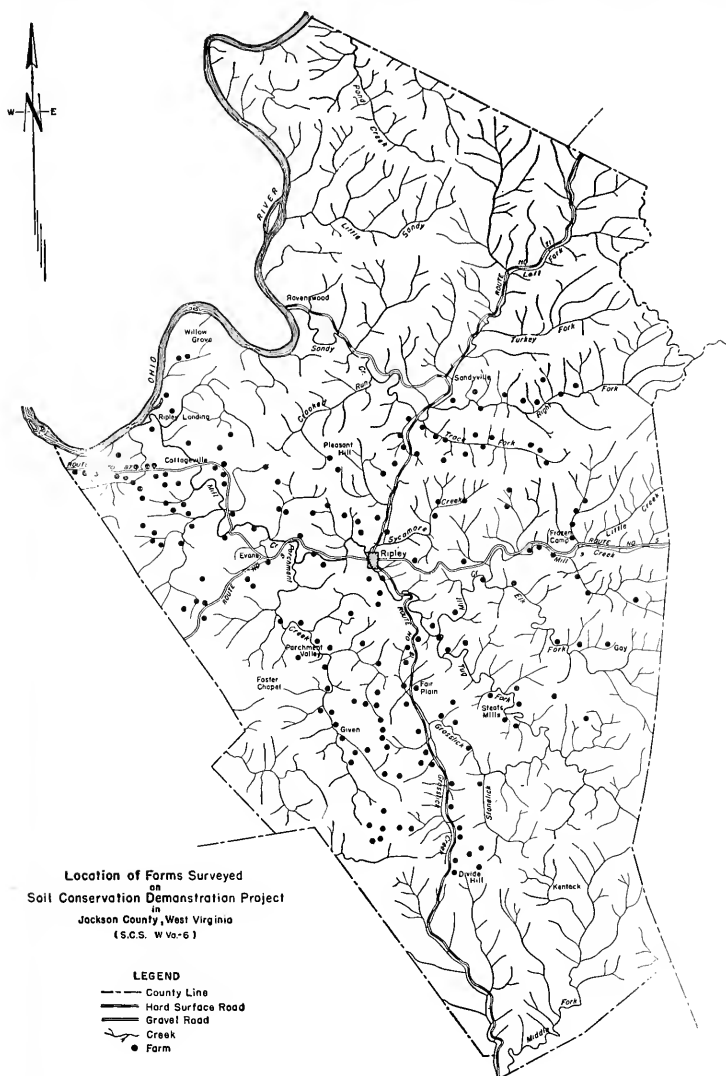


FIG. 1

³Pohlman, G. G., Land Classification in West Virginia, Bul. 284, West Virginia Agricultural Experiment Station, November, 1937,

of this steep land, much of it has been abandoned or has reverted to pasture. Erosion is very severe on the steeper slopes when they are cultivated and planted to annual grains or row crops. (Fig. 2.)

The Ohio River section of Jackson County represents the principal portion of the land of lesser slopes. The southeastern part of the county is very steep and rough, embodying little farming of any consequence. The elevation of the area ranges from about 580 ft. at the Ohio River to possibly 700 ft. in the eastern portion.



FIG. 2—Stream overflow in the narrow valley carried away more than nine inches of topsoil from this soybean field

*Soils*⁴

There are about 19 distinct types of soil in the Jackson area. These types represent three different physiographic regions: i. e., flood plains, terraces, and uplands.

The **flood plains**, or first bottoms, are found principally along the Ohio River. The alluvial deposits of the river have produced these soils. They are subject to little or no erosion. However, inundation by overflowing streams is a frequent occurrence, and deposition of silt and gravel often occurs. (Fig. 3.)

The **terraces**, or second bottoms, occur along the principal streams, draining into the Ohio. They are derived primarily from the higher lying soils and have been deposited along the streams and lesser slopes by washing. These are the most important crop-producing soils in the area. These lowland soils have a decidedly silty clay texture. They are inclined to be rather sticky, and in some places poorly drained. Because of slow percolation of free water into these soils, sheet erosion causes serious damage.

⁴W. J. Latimer and C. N. Mooney, Soil Survey, Jackson County, U. S. Dept. of Agriculture, 1911.

The **upland soils** constitute about three-fourths of the entire area. They are generally steep, erosion is extremely active on them, and "slips" are common. In the past these upland soils have produced well and were farmed rather intensively despite their slope. Little effort, however, was given to management practices that would minimize erosion. In many instances they have been abandoned, and undesirable brush and weeds are the only cover.

The Reconnaissance Survey of West Virginia classes the majority of this area as having severe sheet erosion and frequent gullies. This denotes a serious handicap to agriculture.

Climate

The climate of this area is mild. Neither hot nor cold periods are of long duration. Only slight variations in mean temperature were reported for the two years, except during the winter months. During the months of December, January, and February, 1936, the temperature ranged 10 to 15 degrees higher than was true of the same period in 1935.



FIG. 3—Soil and ground washed from above was deposited on this corn field. Land is temporarily or permanently destroyed

During the same period precipitation was about seven inches above normal, causing many disastrous floods and much erosion on agricultural lands. The spring and summer growing season of 1936 was very dry. In fact the total precipitation for the latter year was about six inches less than during 1935. The average annual rainfall for the area is about 40 inches.

The irregularity of rainfall, combined with other factors, constitutes a serious handicap to erosion-control measures. Very heavy rainfall for short periods causes much damage to land not fully protected against this hazard. Long periods of droughty weather ren-

der the topsoil very dry. It then is removed easily from the relatively impervious steep slopes by torrential rainfall.

Land Classification

On the basis of soil, climatic, economic, and social factors, the land of the county has been divided into classes according to the influence of the various factors on the use and value of land for agricultural purposes.

Very little land in Jackson County is classified in the three better land classes (Table 1). More than one-half of the area of the county is rated as poor crop land and average pasture land. From this it appears that the land generally should be devoted to pasture and forage crops with the possible exception of small areas of alluvial and terrace soils.

TABLE 1—*Proportion of land of Jackson County in various classes for agricultural use¹*

Class and description		Percentage in each class
I	—Superior crop land	1.63
II	—Good crop land	1.51
III	—Average crop land	1.82
IV	—Below average crop land — good pasture	19.67
V	—Inferior crop land — average pasture	56.46
VI	—Submarginal land	18.56
VII	—Forest land	.35
VIII	—Urban and industrial land	.35
Total		100.00

¹Pohlman, G. G., Land Classification in West Virginia, Bul. 284, West Virginia Agricultural Experiment Station, 1937.

Social Aspects of Farm Families

The paved north-south route and the gravel east-west route constitute the major improved roads serving the area as a whole. The remainder of the roads serving the various communities are ordinary clay-base roads. Two-thirds of the farms are located on clay roads which become muddy and sometimes impassable during long rainy periods. Only 12% of the farms studied were located on paved roads while 20% were on gravel-surfaced roads.

The secondary schools are rather distant from some communities, especially for those families situated on the poor type of roads. Ordinarily the community institutions are within reasonable distance of most localities.

Age of Farmers

The age of farmers in the Jackson area, as in many rural areas in West Virginia, is high. The average age of farm operators in 1935 was 54.

According to the distribution of ages, 47% of all farmers were over 55 years of age, and 24% were over 65. Very few younger men appeared to be interested in farming as a life work. Many young

men from the farms obtain employment in the industries of this and other states where cash wages seem to be more attractive than the livelihood afforded by the farm.

Background of Farmers

Practically all the farmers surveyed were descendants from older residents of the same areas. Ninety-seven percent were born on farms.

A majority seem to have moved about considerably. Fifty-five percent had moved from farm to farm an average of 2.7 times before acquiring their present home. Almost one-third of all farmers had lived in town at least once during their life. Although data are not available to substantiate directly a motive for these moves to town, it can reasonably be assumed that many of these families obtained their livelihood from industrial work in earlier life. More than 50% of the farm operators had worked at laboring jobs for an average period of 12 years before becoming farmers. Others held jobs either before becoming farmers or had ceased farming for a period and had engaged in other work.

Approximately 30% had been tenants for a comparatively short time before becoming owner-operators. The usual term of tenancy did not exceed five years. The average term of ownership for farmers reporting these data was 27 years.

Farm Families

At the time of the survey, there were 4.5 persons in the average farm home including children, relatives, and others. About 8% of the farm children born per family had died before 1935.

A majority of the sons had left the farm for work of other types. However, 43% were farming either on the home farm or elsewhere. This proportion was greater than was the case in some other areas of the state.

Fewer of the daughters had remained on the home farms than was true of the sons. However, more than 50% of all married daughters had married farmers and were living in the home community or elsewhere on farms. Like most other present-day rural areas that are in proximity to some business or industrial areas, the younger single women had found employment away from the farms.

Only a small percentage of the homes had utility conveniences, and many could not afford automobiles. The farmsteads were equipped with a minimum of machinery.

Most communities were completely rural and many families led a rather frugal existence, possessing few of the modern conveniences and enjoying a limited portion of the goods of society.

Conditions Affecting Social and Economic Planning

A planning program purporting to establish greater stability and permanency to the agricultural livelihood of this area must face the

following facts: (1) The location of many of these people on poor roads, relatively remote from market, will make progress slow, especially with keen competition from areas more advantageously located. (2) The age of farmers determines to a large extent their willingness to adopt new, improved methods of farming. The fact that farmers in this area average 54 years of age signifies that many of them are probably not intensely interested in expending much cash to establish a long-time improvement program. (3) This condition is further substantiated by the fact that a majority of the children and younger people have sought a livelihood away from the farms. Thus neither the young nor the old are intensely interested in the future improvement of agriculture in the area. (4) Many of these people became farmers not by choice but by necessity. It is evident that many became farmers after spending their most productive years at industrial work. Their lack of training and experience undoubtedly has had the effect of producing a less stable type of agriculture. A lack of care and attention that should have been given the land has probably accounted for many of the land problems encountered at this time. (5) Speculation in gas and oil underlying most of the area has led some to depend and wait on expected wealth from these sources. In the meantime the land has been neglected.

Agricultural Production

The following description of the agriculture in the Jackson area is intended to portray in detail the basic sources of income and the plan of farm organization. Data have been obtained for two successive years, 1935 and 1936. The data for 1935 represent conditions before being disturbed by the program of conservation. The data for the following year do not show significant changes, since the demonstration work had not progressed sufficiently during the first year. However, certain tendencies are already in evidence and will be pointed out. In addition, certain conditions will be described that have a direct relationship to the program of soil conservation which has been established. The following description of farming should be valuable in understanding the conditions within this area, which is fairly representative of a large portion of West Virginia, and the relationship of these conditions to the planning of a conservation program.

Of the 34,000 acres included in the 187 farms, all except 13% were owner-operated. Slightly more land was rented in 1936 than during the preceding year, accounting principally for the increase of approximately three acres in the average size of farms.

Size of Farms

The average size of the 187 farms was 179 acres in 1935 and 182 in 1936. This is larger than the average of 98 acres in the county, and 90 acres per farm in the state as a whole. The farms ranged in

TABLE 2—*Distribution of farms according to size in Jackson area, 1935-36*

Size class (Acres)	Number		Percentage in each class	
	1935	1936	1935	1936
1-50	19	17	10.2	9.1
51-100	40	45	21.4	24.1
101-150	41	38	21.9	20.3
151-200	24	26	12.8	13.9
201-250	29	24	15.5	12.8
251-300	12	11	6.4	5.9
Over 300	22	26	11.8	13.9
Total	187	187	100.0	100.0

size from less than 50 acres to more than 300 acres, and were rather evenly distributed within this range. Less than one-fourth of all farms fell within any one size class as shown in Table 2. However, 50% of all farms were under 150 acres in size, and less than 20% were over 250 acres.

Investment

The average investment for the years 1935 and 1936 was approximately \$7000 per farm. The increase noted during the two-year period was primarily a result of a general increase in the value of livestock. There was also a slight increase due to the excess of improvements over depreciation. During the depression years few repairs were made. Hence, necessary repairs and improvements exceeded in value the annual depreciation charged against the beginning inventory.

The percentage of the total investment represented by the respective items of farm valuation is presented in Table 3. Half of the total investment of these farmers was in land, while slightly more than one-fourth was in buildings. The remaining one-fourth was in livestock, machinery, and supplies.

TABLE 3—*Proportion of total investment in various items on 187 farms in Jackson area¹*

Property	Investment per farm		Percentage of total investment	
	1935 ²	1936	1935 ²	1936
Land and fences	\$3,537	\$3,545	51.9	51.0
Dwelling		1,041	...	15.0
Barn	1,951	557	28.7	8.0
Other buildings		339	...	4.9
Total real estate	\$5,488	\$5,482	80.6	78.9
Livestock	983	1,125	14.4	16.2
Feed and supplies	35	53	.5	.7
Machinery and equipment	301	285	4.5	4.2
Total	\$6,807	\$6,945	100.0	100.0

¹170 farmers possessed investment in real estate, at an average value of \$6,056.

²Valuations for buildings were not itemized for 1935.

The sum of \$300 appears small for the total per-farm valuation on machinery especially when a large percentage of the value was in automobiles, a relatively non-productive item of equipment. Farm machinery has depreciated markedly and was in a poor state of repair. In general, it has received poor care and has not been replaced at regular intervals. Consequently the majority of the farm machinery found on these farms was old and of low value.

The investment in livestock appeared to be above average for this section of the State, and considering the past low-producing years most farms were moderately well stocked. However, many of the smaller farms were devoid of livestock above that necessary for a self-sufficing livelihood.

Farm dwellings constituted 54% of the total investment in real improvements while the barns and other buildings constituted about 46% of the total. In general, it appeared that much of the investment was in the farm as a home rather than a business unit. A large portion of the total capital of any business in non-productive equipment necessarily reduces the cash income-producing ability.

TABLE 4—*Bottom land, crops on slopes, and area burned over annually, Jackson area, 1935*

Items	Total acres	Percentage of total land area	Number of farms reporting	Acres per farm reporting	Acres per farm (all farms)
Bottom land	3,609	10.8	149	24.2	19.3
Crops on slopes	3,075	9.2 ¹	130	23.7	16.4
Acres burned	681	... ²	37	18.4	3.6

¹Crops on slopes represent 47.1% of all crop land.

²Acres burned over in 1935 represent 3.4% of area in permanent pasture.

THE CHARACTER OF FARMING

Land Use

To a greater extent than any other single factor, the use of land probably reflects its ability to maintain a population. Land use has, to an appreciable extent, determined the present economic status of this area and will affect materially the future of the area.

Approximately 11% of the total land in farms was bottom land and terraces. This percentage allowed an average of about 24 acres of bottom land per farm for the 149 farms reporting this item. The bottom land described above was not necessarily first bottom, but a part of it was terrace soils which were not necessarily free from slope.

Farmers in this area for several years had followed the practice of burning their pastures. Many stated that the practice has since been abandoned. The motive for this practice was to clear the land of briers, tough grasses, and debris. In 1935, 37 farmers burned an average of 18 acres per farm, a total of 681 acres. This acreage represented about 3.4% of all pasture land. Undoubtedly such a practice is conducive to erosion. The land is cleared of its organic residue and left without a covering of absorptive material that would ordinarily

TABLE 5—*Land use of 187 farms in Jackson area, 1935-36*

Land use	Acres per farm		Percentage of all land		Number farms reporting	
	1935	1936	1935	1936	1935	1936
Crops	34.9	35.2	19.5	19.3	187	186 ¹
Permanent pasture	107.9	111.9	60.3	61.5	182	186 ²
Woods pastured	24.0	21.6	13.4	11.8	156	146
Woods not pastured	6.4	9.9	3.6	5.2	54	71
Other land	3.5	1.1	2.0	.9	48	20
Farmstead, roads, etc.	2.1	2.3	1.2	1.3	187	187
Total	178.8	182.0	100.0	100.0	187	187

¹One farmer rented out all crop land.

²One self-sufficing farmer share-rented only crop land as a farm.

serve as an agent for conducting water into the soil. Surface water is permitted to run off at a rapid rate and to carry quantities of soil with it. (Tables 4 and 5.)

About 19% of all land was devoted to crops while approximately 60% was permanent pasture. The large percentage of farm area in pasture immediately suggests a grazing type of agriculture. About 16% of all land in farms was woodland, three-fourths of which was pastured. The remainder of the land in farms was classified as other land and as farmsteads. (Fig. 4.)

The only changes in land use that were significant in the data for 1936, compared with the preceding year, were as follows:

- increase in pasture land per farm, accomplished generally by renting more land;
- decrease in woods pastured and resulting increase in woods not pastured;
- decrease in idle land, accomplished by planting to trees and by using all land possible.

Practically no change in acreage of crop land was noted, but the

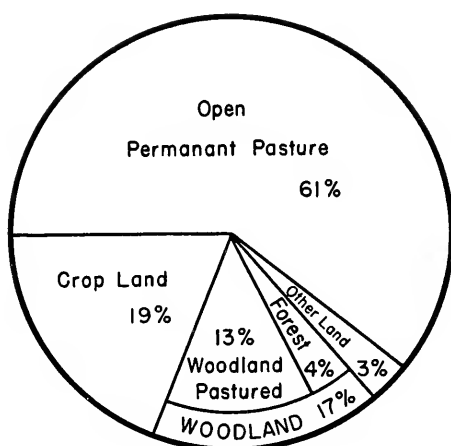


FIG. 4—Use of land in Jackson County area

tendency appeared to be toward an increase coordinate with the general tendency to use all land possible, some of which had been idle in prior years.

Farm Practices

Because of the rough topography of the land very few farmers use modern cultivating and harvesting equipment. Much of the grain is still cut by a drop reaper or cradle and is bunched and tied by hand. Many other jobs facilitated by machinery in other areas are accomplished by hand labor here.

During the depression years 1930 to 1934, very little fertilizer and lime were applied. In fact, lime has never been used extensively by these farmers in spite of a rapidly growing need. The data in Table 6 indicate that the use of fertilizer and lime is becoming more general. One-fourth more farmers used some commercial fertilizer in 1936 than in 1935, and 50% more acres were treated in the latter year. The tendency in 1936 was to treat more acres with slightly less fertilizer per acre. It may be noted that about 14% of all crop land was treated with fertilizer.

The number of farmers using lime tripled in the latter year over 1935. The average acreage treated per farm increased 400%, accompanied by a slight increase in the rate of application per acre. This denotes a definite trend toward soil-building practices that have been seriously lacking heretofore.

TABLE 6—*Fertilizer, lime, and manure used by 187 farms in Jackson area, 1935-36*

Items	Acres treated per farm		Amount used per acre		Number reporting use	
	1935	1936	1935	1936	1935	1936
Commercial fertilizer	4.2	6.2	262 lbs.	229 lbs.	81	109
Lime	.5	2.2	2.3 T.	2.5 T.	12	33
Manure	5.3	5.4	6.9 T.	5.5 T.	152	179

CROPS

The major crops grown in the Jackson area during 1935 were hay, corn, and wheat. Corn and hay represented the feed crops for a live-stock type of farming, while wheat is a remnant of a cash grain type of farming which has almost vanished. Wheat now furnishes the farms with some small grain feed. (Table 7.)

Hay occupied 61% of all crop land in 1935. About 85% of the total acreage in hay was mixed clover and timothy. The remainder was divided between alfalfa, soybeans, wheat hay, and oat hay. In 1936 the hay acreage increased about 3% primarily because of the introduction of lespedeza as a forage crop and the growing of more alfalfa for dairy feed.

Corn is the second most important crop from the standpoint of acreage. It is important from the standpoint of maintaining live-

TABLE 7—*Acreage of crops on 187 farms in Jackson area, 1935-36*

Crop	Acres grown per farm		Percentage of all crop land		Number farms reporting	
	1935	1936	1935	1936	1935	1936
Corn—grain	8.3	7.0	23.1	19.3	169	160
silage	.4	.2	1.1	.6	9	4
Wheat	3.0	3.4	8.4	9.4	67	70
Oats	.1	...	.3	...	4	...
Mixed hay	18.6	17.5	51.8	48.5	171	168
Alfalfa	.6	.9	1.7	2.5	11	20
Soybeans	1.5	1.5	4.2	4.1	43	48
Wheat hay	.7	.7	1.9	2.0	19	18
Oat hay	.5	.9	1.4	2.5	15	29
Lespedeza	...	1.2	...	3.3	...	35
Potatoes	.1	.1	.3	.3	50	61
Truck	.8	.9	2.2	2.5	154	185
Orchard	.9	1.5	2.5	4.1	43	99
Other	.4	.3	1.1	.9	14	12
Total	35.9	36.1	100.0	100.0	187	187

stock as well as food for home consumption. The farms surveyed in 1935 produced 8.7 acres of corn per farm, or about 24% of all crop land. In 1936 there appeared to be a definite tendency away from this comparatively high corn acreage. The average acreage grown per farm in this latter year was 1.5 acres less than in 1935. This seems to be a desirable tendency since many farms do not have bottom or other land suitable for growing large acreages of corn without danger of serious erosion. If corn acreage can be reduced to a minimum by substituting erosion-resistant crops in its place, the productivity of much of the sloping land of the area may be prolonged.

Wheat occupied 8.4% of all crop land in 1935 and increased slightly to 9.4% in 1936. Practically no other small grains were grown in the area except some oats for hay. Wheat is sometimes cut for hay, particularly in drought years. Truck and fruit are not grown to any great extent. Hence they occupy a very small percentage of the total land area of these farms.

Erosion Resistance of Crops

In reviewing the soils and topography of the Jackson area it was pointed out that the greater part of the area was subject to serious erosion. Because of the steepness of land and the heavy precipitation it is desirable wherever possible to grow crops that will protect the soil against erosion and at the same time build up the plant food content for maintaining crop production. (Fig. 5.)

In Table 8 the crops have been classified according to their ability to resist erosion. One of the primary objectives of the soil-conservation program is to encourage farmers to fit into their farm organization those crops that will resist erosion, thereby replacing some of the non-erosion-resisting crops now grown.

The data indicate that 56% of all crops grown in 1935 were erosion-resistant, consisting principally of forage crops. There was



FIG. 5—Land having slopes of 25 to 40 percent is cultivated continuously without the use of erosion-control measures. Sheet and gully erosion are extremely active

an increase of about 2.5% in erosion-resistant crops in the following year. The introduction of lespedeza and the encouragement given to the growing of alfalfa is partially, if not entirely, responsible for this increase. On the other hand those crops, principally corn, offering practically no resistance to erosion, decreased in acreage per farm by about 1.4 acres. The semi-erosion-resistant small grains increased slightly in 1936.

In general it appears that during future years there will be a more decided shift to erosion-resistant crops if the farmers are able to fit them into their production program advantageously. However, the high cost of lime, fertilizer, and seed for legumes has made such changes almost impossible with some farmers during the past year. The change must be gradual if accepted on the small farms, which are generally the ones most in need of a change to erosion-resistant crops.

Crop Yields

Crop yields were comparatively low during 1936. The drought conditions during the year reduced the hay yields more than 50%

TABLE 8—Character of crops grown with respect to comparative resistance to erosion

Type of crops	Acreage per farm		Percentage of all crop land	
	1935	1936	1935	1936
Erosion-resistant	20.1	21.1	55.9	58.4
Semi-erosion-resistant	6.2	6.8	17.3	18.8
Non-erosion-resistant	9.6	8.2	26.8	22.8
Total	35.9	36.1	100.0	100.0

creating a scarcity of forage during the following winter. Pastures were very short during the summer. Wheat yields were about 9% lower than in 1935. (Table 9.)

The yields of corn were very low for both years, being less than two-thirds of the state average. These low yields indicate a need for general improvement in soil productivity. Other grain crop yields also were low during both years. There have been two handicaps in producing grain crops in this area: (1) drought has frequently destroyed crops during the last decade; and (2) the crops grown on bottom soils in the narrow bottoms are frequently flooded during the growing seasons, which reduces yields materially.

An interesting comparison can be seen in the variation in yields of the several hay crops. Oat hay generally is a low producer, yet a few farmers continue to raise it. Wheat is seldom cut for hay except when it is needed more for forage than for grain, or in cases when its value as grain is destroyed by climatic conditions. Although alfalfa was raised by a comparatively few farmers, the yields of this crop were promising in comparison with the low yields of mixed hays. It is true, however, that crop yields probably could be increased appreciably by raising more of perennial legumes in place of the grain and timothy hay now grown.

TABLE 9—Yields of major crops grown in Jackson area

Crop		Yield per acre	
		1935	1936
Corn	(bu.)	16.6	17.6
Wheat	(bu.)	11.0	10.0
Mixed hay	(T.)	1.2	.6
Alfalfa	(T.)	2.8	1.6
Wheat hay	(T.)	2.6	.8
Oat hay	(T.)	1.2	.6
Soybeans	(T.)	1.9	1.2
Lespedeza		...	... ¹

¹All new plantings.

Pasture Capacities

The yield of pastures in this area is of equal or greater importance to farm income than crop yields when considered in connection with the predominant livestock type of farming. Unfortunately a fallacious opinion has existed here as well as elsewhere in regard to the growing of pastures. It has been assumed, too generally, that pastures were a spontaneous product of nature. Consequently they have received little care and often have deteriorated in quality. Sheet erosion and drought have practically destroyed large acreages as a result of neglectful management. More care in establishing and utilizing pastures is needed if their maximum usefulness is to be secured. (Fig. 6.)

According to a recent survey⁵ of pasture conditions in Jackson

⁵Pierre, W. H., et al. West Virginia Pastures, West Virginia Agricultural Experiment Station Bul. 280. 1937.



FIG. 6—The productive life of steep land that is cultivated without regard to erosion control is short. Soon much of it is abandoned to low-quality pasture and brush

County, they were of very low quality. Only 13.5% of the total pasture grasses was desirable, compared to 47% in two eastern counties and 24% as an average for the state. Approximately 92% of all pastures was in need of an average of at least one ton of lime per acre, and 97% was in need of phosphorus. It was estimated that 36% of all pasture land was not worth improving. In general, this eliminates more than a third of the pasture land. About 77% of all pastures included in the survey was classed as poor.

The acreage of pasture available per farm was above average for the state. In 1935 there were 132 acres of available pasture area per farm, and slightly more in 1936. This allowed about 7.6 acres per animal unit if the wooded pasture is included, or 6.3 acres if woodland is excluded. From observation it is known that the average pasture-carrying capacity was low during both years. The logical conclusion is that if pastures were improved, more livestock could be maintained at a higher rate of return to the farmers, while the annual cost of improving would be comparatively low. (Table 10.)

Crop Sales

On most of the farms crop sales are only supplementary to the

TABLE 10—*Pasture available on 187 farms in Jackson area*

Kind	Acres per farm		Acres per animal unit pastured	
	1935	1936	1935	1936
Oren permanent pasture	107.9	111.9	6.2	6.4
Wooded pasture	24.0	21.6	1.4	1.2
Total	131.9	133.5	7.6	7.6

TABLE 11—*Crop sales of 187 farms in Jackson area, 1935-36*

Sold		Prices received per unit		Value per farm		Number of farms reporting	
		1935	1936	1935	1936	1935	1936
Corn	(bu.)	\$.81	\$ 1.14	\$ 7.37	\$13.83	19	21
Wheat	(bu.)	.89	1.20	4.20	4.89	6	10
Oats	(bu.)	....	....	....	....	..	..
Mixed hay	(T.)	10.68	15.64	4.74	6.02	15	17
Alfalfa	(T.)	14.50	21.58	6.20	2.77	2	3
Straw	(T.)	....	....	2.69	4.63	4	11
Potatoes	(bu.)	.64	1.15	2.05	1.25	6	6
Truck	....	....	....	7.09	11.10	11	17
Fruits	....	....	....	22.91	9.85	8	5
Other	....	....	....	1.20	.91	1	2
Total	....	....	....	\$58.45	\$55.25	47	52

income from livestock enterprises. Slightly more than one-fourth of all farms sold any crops during either year. The receipts from all crops sold, including truck and fruit, were less than half the value of feed bought during 1936. (Table 11.)

The average receipts per farm from crop sales during 1935 and 1936 were \$58 and \$55, respectively. Crop sales consisted largely of crops raised on land reasonably well protected from erosion. Most truck crops are grown on level or nearly level land, which is not subject to serious erosion.

It is not feasible that many of these farms can efficiently grow crops for sale. This is especially true of the non-erosion-resistant crops. It may be expected that crop sales will decrease rather than increase if erosion-resistant crops replace the soil-depleting grains now grown.

LIVESTOCK

Animal Units

Livestock, as has been pointed out, is the most important income-producing enterprise on the Jackson County farms. The number of animal units which available feed and pasture will maintain effi-

TABLE 12—*Average number of animal units on 187 farms in Jackson area, 1935-36*

Livestock	Animal units per farm		Number per farm reporting each type	
	1935	1936	1935	1936
Dairy cows	3.5	3.4	4.3	3.9
Dairy heifers	.3	.3	1.3	1.0
Beef cows	3.5	2.9	8.6	7.9
Beef heifers	.5	1.0	1.8	2.4
Steers	4.1	4.6	9.6	9.0
Bulls	.4	.4	1.2	1.0
Calves	.9	.9	1.3	1.1
Horses	1.9	1.9	2.3	2.3
Colts	.1	.2	.8	.6
Swine	.5	.5	1.2	1.1
Sheep	2.1	1.8	6.1	5.2
Poultry	1.3	1.6	1.9	2.0
Total	19.1	19.5	..	..

ciently is of great importance in determining the income to the farm operator. (Table 12.)

In 1935 there were about 19.1 animal units per farm, 13 of which were cattle. In the following year the average number of animal units maintained per farm was only a fraction higher. The slight increase was accounted for by increases in cattle and poultry.

The feed available per animal unit was much less per farm in 1936 than in 1935. In the case of roughage less than half as much was available as in 1935. Although grains were available in lesser quantities, the shortage in this respect was not as serious as was true of roughage. In subsequent years the feed available per animal unit may be profitably increased both in quantity and quality, and undoubtedly will be if legume hays find a general place in the average farm program. This should enable farmers to produce more livestock at a greater advantage.

Livestock Inventory

About 20% of the total investment in livestock was represented by work animals (Table 13). The value of beef animals was about 41% of the total and the dairy stock value was about 23%. The remaining 16% was divided between all other types of livestock. Although about one-third of the farms reported an average flock of 50 sheep per farm, this type of livestock constituted little more than 6% of the total livestock investment per farm. Steers were reported on approximately half of all farms at the close of the second year's inventory. These data indicate that many farms were not stocked with the major income-producing enterprise of the area. A large percentage of the farms kept dual-purpose cattle along with some hogs and chickens for home consumption.

TABLE 13—*Livestock inventory for 187 farms in Jackson area, 1935-36*

Livestock	Value per farm June 1		Percentage of total value	
	1935	1936	1935	1936
Dairy cows and heifers	\$168.87	\$ 175.83	17.2	15.6
Beef cows and heifers	173.11	184.02	17.6	16.4
Steers—1 yr.	163.61	153.00	16.7	13.6
2 yr.	.....	79.41	...	7.1
3 yr.	 ¹	18.93	...	1.7
Bulls and calves	69.50	75.77	7.1	6.7
Horses and colts	236.08	249.41	24.0	22.2
Swine	32.09	32.92	3.3	2.9
Sheep and lambs	68.25	68.79	6.9	6.1
Poultry	70.94	86.43	7.2	7.7
Total	\$982.45	\$1124.51	100.0	100.0

¹Steers were not classified according to age in 1935.

Livestock Purchases and Sales

Steers constituted 40 to 54% of all livestock purchased during the two-year period (Table 14). The average total value of all live-

stock purchased per farm was \$200 in 1935 and \$163 in 1936. These values indicate a tendency toward a small cash "outlay" for productive livestock. There may be two reasons: (1) inability of the farms to support additional stock on the available pasture and forage; and (2) lack of financial ability to purchase more. In either or both instances the income-earning capacity is necessarily affected because of the lack of basic livestock.

A large percentage of the livestock sold is raised on the respective farms. The average total receipts from livestock sales were \$432 in 1935 and \$539 in 1936. Steers constituted about 38% of the value of all sales in either year, while calves and lambs were next in importance. Although average sales per farm were small, chickens and calves were more generally sold by all farmers than any other class of livestock. It was the sale of steers, lambs, and other more valuable stock, although sold by fewer farmers, that materially increased the average farm income. However, it should not be construed that many farms could not increase net income by expanding the dairy and poultry enterprises.

TABLE 14—*Livestock purchases and sales on 187 farms in Jackson area, 1935-36*

Livestock	Value of purchases per farm		Percentage of total purchases		Value of sales per farm		Percentage of total sales	
	1935	1936	1935	1936	1935	1936	1935	1936
Dairy cows and heifers	\$ 17.84	\$ 17.70	8.9	10.9	\$ 32	\$ 37	7.4	6.9
Beef cows and heifers	11.16	15.94	5.6	9.8	36	57	8.4	10.6
Steers	108.20	65.63	54.0	40.4	165	203	38.3	37.6
Bulls	4.28	9.13	2.1	5.6	17	17	4.0	3.1
Calves	6.07	2.87	3.0	1.8	38	54	8.8	10.0
Horses and colts	31.04	32.20	15.5	19.8	35	35	8.1	6.5
Swine	8.35	8.36	4.2	5.1	26	24	5.9	4.4
Sheep	4.12	4.80	2.1	3.0	36	47	8.4	8.8
Poultry	9.15	5.94	4.6	3.6	47	65	10.7	12.1
Total	\$200.21	\$162.57	100.0	100.0	\$432	\$539	100.0	100.0

LIVESTOCK PRODUCTS

Farmers sold eggs more than any other single livestock product. Practically all farm families kept a small flock of poultry from which they sold the eggs produced in excess of home consumption. This item constituted 46% of all income from livestock products in 1935 and 40% for the year following. (Table 15.)

Although sold by a very small percentage of farmers, fluid milk accounted for about 36% of all receipts from livestock products during either year. Cream was the dairy product most generally sold, but it was sold in relatively small quantities from the many general farms. A few farmers sold some butter. Wool was an important source of income to about 30% of the farms. This item did not contribute a major portion of gross farm receipts, but it did represent

TABLE 15—*Livestock products sold from 187 farms in Jackson area, 1935-36*

Product		Price per unit		Value per farm		Percentage of total		Number reporting	
		1935	1936	1935	1936	1935	1936	1935	1936
Milk	(gal.)	\$.26	\$.25	\$ 90.67	\$109.70	36.4	36.1	8	6
Cream	(lb.)	.21	.30	27.05	34.92	10.9	11.5	48	71
Butter	(lb.)	.25	.24	1.67	1.51	.6	.5	5	13
Wool	(lb.)	.32	.38	14.25	18.95	5.8	6.3	64	65
Market eggs	(doz.)	.19	.21	114.52	122.23	46.0	40.3	165	162
Hatching eggs	(doz.)	..	.31	.. ¹	11.22	..	3.7	..	20
Honey		..	..	.56	1.17	.2	.3	3	6
Breeding fees		..	..	..	3.10	..	1.1	..	20
Other		..	..	.11	.57	.1	.2	3	20
Total				\$248.83	\$303.37	100.0	100.0	175	177

¹Included in market eggs.

an income item which was produced at a small cash cost. The average farm received \$249 for livestock products in 1935 and \$303 in 1936, or an increase of 22%. Higher prices per unit were largely responsible for the increase.

MISCELLANEOUS FARM INCOME

Receipts other than from crop and livestock enterprises were relatively unimportant on most farms. Some farms pastured stock for neighbors, and a few sold some forest products.

Miscellaneous receipts amounted to \$27 per farm in 1936, compared with \$7 for the prior year. The increase was attributed largely to the payments of the Agricultural Adjustment Administration and to the increase of receipts from forest products, as indicated in Table 16.

NON-AGRICULTURAL INCOME

Income from non-farm sources was excluded from farm income but was included in operator's earnings. During 1935 the average farm received \$132 from non-agricultural sources and \$199 during the

TABLE 16—*Miscellaneous farm receipts on 187 farms in Jackson area, 1935-36*

Source	Amount per farm		Percentage of total		Number reporting	
	1935	1936	1935	1936	1935	1936
Stock pastured	\$3.11	\$ 2.51	43.9	9.3	17	23
Rent from land and buildings	.89	.15	12.5	.6	3	2
Team and machine work	.93	2.43	13.1	9.0	10	17
Operator's work	1.06	1.10	15.0	4.1	10	7
Forest products	1.10	9.09	15.5	34.0	3	11
A. A. A. ¹	..	6.95	..	25.9	..	40
Miscellaneous	..	4.57	..	17.1	..	17
Total	\$7.09	\$26.80	100.0	100.0	36	89

¹Payments for production control or other governmental programs were not recorded in 1935.

TABLE 17—Miscellaneous non-farm receipts of 187 farms in Jackson area, 1935-36

Source	Amount per farm		Percentage of total		Number reporting	
	1935	1936	1935	1936	1935	1936
Rent from land and buildings	\$ 1.22	\$ 5.06	.9	2.6	2	8
Trucking	20.85	7.49	15.8	3.8	3	5
Team and machine work	3.80	2.99	2.8	1.5	8	12
Operator's work	76.94	112.23	58.2	56.3	33	53
Royalties, leases	23.24	67.72	17.6	34.1	16	102
Miscellaneous	6.28	3.56	4.7	1.7	6	2
Total	\$132.33	\$199.05	100.0	100.0	62	132

following year. The major portion of these respective sums was derived from gas royalties and leases and from operator's work not related to farm operations. Recent developments of natural gas in the area undoubtedly will continue to give these farmers appreciable supplementary income. This industry also gives some work to farmers in the area. (Table 17.)

TOTAL FARM RECEIPTS

The total agricultural receipts averaged \$747 per farm in 1935, and \$924 in 1936, an increase of 24% for the latter year. Crop receipts showed a small decline while the livestock enterprises showed larger returns in 1936, as indicated by data presented in Table 18 and in Figure 7.

The proportion of gross farm receipts derived from the various sources varied only slightly for the two years. Livestock, sold as meat or breeding stock, contributed approximately 58% of all agricultural receipts, while 33% of all receipts was derived from live-

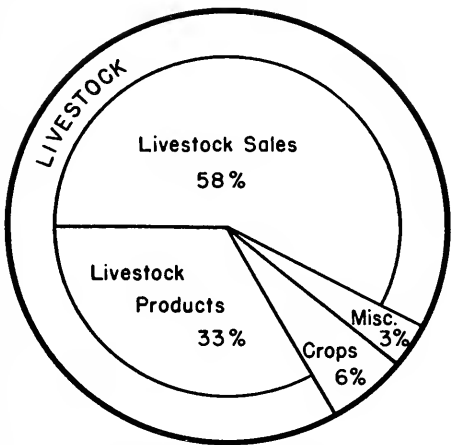


FIG. 7—Sources of cash farm income in Jackson County area, 1936

TABLE 18—*Recapitulation of cash farm receipts of 187 farms in Jackson area, 1935-36*

Receipts	Amount per farm		Percentage of total	
	1935	1936	1935	1936
Crops	\$ 59	\$ 55	7.8	5.9
Livestock	432	539	57.9	58.3
Livestock products	249	303	33.3	32.8
Miscellaneous receipts	7	27	1.0	3.0
Total cash receipts	\$747	\$924	100.0	100.0

stock products. The remaining 9% was from crops and miscellaneous sources.

FARM EXPENSES

Current operating expenses, excluding labor, amounted to \$251 per farm in 1935 and \$307 per farm in 1936. Feeds, both concentrates and roughages, represented 36% and 46%, respectively, of the total for the two years. These were largely mixed concentrate feeds.

Taxes were the next major item of farm expense, requiring about \$30 per farm or about 12% of all expenses in 1935, while the cost of seeds exceeded taxes in 1936. It is surprising that production expenses such as seed, fertilizer, and lime were not higher in this area. However, high transportation costs tend to discourage the use of both fertilizer and lime, and the cost of legume seed generally was excessive during 1936. The proportion of the other items of expense varies somewhat from year to year, but their relatively small values do not change the general picture markedly. (Table 19.)

The expenditures for labor, aside from operator's labor, nearly

TABLE 19—*Current operating expenses¹ of 187 farms in Jackson area, 1935-36*

Item of expense	Average per farm		Percentage of total		Farms reporting	
	1935	1936	1935	1936	1935	1936
Roughage	\$ 8.81	\$ 38.70	3.5	12.6	42	92
Concentrates	81.47	101.39	32.4	33.0	177	162
Feed preparation	2.43	4.19	1.0	1.4	20	35
Fertilizer	13.39	14.21	5.3	4.6	84	104
Lime	3.94	11.05	1.6	3.6	14	37
Seeds and plants	21.51	29.14	8.6	9.5	117	140
Marketing expense	17.20	15.37	6.9	5.0	40	58
Machine hire	4.20	5.63	1.7	1.8	60	61
Professional service	5.14	6.02	2.0	1.9	64	77
Taxes	30.68	28.14	12.2	9.2	173	172
Insurance and licenses	5.55	16.84	2.2	5.5	67	92
Interest charges	.79	1.56	.3	.5	7	15
Fuel and utilities	11.15	8.89	4.4	2.9	103	114
Rent for land	2.38	4.10	1.0	1.3	10	15
Repairs	27.17	9.43	10.8	3.1	146	118
Supplies	8.05	5.32	3.2	1.7	39	49
Miscellaneous	7.37	7.35	2.9	2.4	113	119
Total	\$251.23	\$307.33	100.0	100.0	187	187

¹Excluding labor.

TABLE 20—*Labor expense on 187 farms in Jackson area, 1935-36*

Item	Amount per farm		Percentage of total		Number reporting	
	1935	1936	1935	1936	1935	1936
Wages	\$ 72.33	\$ 84.02	33.7	34.4	122	135
Board	16.97	19.26	7.8	7.9	86	91
Family labor	125.67	140.35	58.5	57.7	113	121
Total	\$214.97	\$243.63	100.0	100.0	164	172

equaled all other expenses. The data in Table 20 indicate that the value of labor per farm was \$215 and \$244 in the respective years. About one-third of these amounts was paid out as cash wages, while 8% was board furnished to hired hands. The remaining 58% represents the estimated value of family labor.

The total of all current expenses per farm amounted to \$466 in 1935 and \$551 for the following year. The latter figure represents an increase over the former year of 18% as against an increase in cash receipts of 24%. Evidently the increase in production expenses was accompanied by a somewhat greater increase in the value of the production.

FARM BUSINESS SUMMARY

The cash income of \$746 per farm in 1935, and \$924 in 1936, was accompanied by a gross increase of \$203 and \$214, respectively, in working capital. This increase in value of capital was largely appreciation in the value of livestock.

Current expenses were accompanied by outlay for livestock purchased, inventory decrease, and depreciation on improvements, equipment, and machinery in the proportions indicated in Table 21. Total expenses for 1935 amounted to \$809 per farm against gross receipts of \$949. In 1936 total expenses amounted to \$888 out of \$1138 of total receipts per farm. Thus farm income amounted to \$140 per farm in the former year and \$250 in the latter, or an increase of 78%. In terms of cash transactions, excluding inventory changes, unpaid labor charges, and annual depreciation, total cash farm income amounted to \$223 and \$371 per farm in the respective years. The latter value represents a 66% increase over the cash income for 1935.

After deducting from farm income 5% interest on investment, an average labor income of minus \$204 and minus \$102 remains for the respective years. In other words, there was 2% earned on capital invested during the year 1935, and 3.6% earned on investment in 1936, allowing no return for operator's labor and management. Another standard of comparison may be had by eliminating from operator's labor income the charge for unpaid family labor. In this manner the value of family farm labor income may be derived. The value of unpaid family labor was \$126 and \$140 for the two years,

TABLE 21—*Financial summary of farm business on 187 farms in Jackson area, 1935-36*

Item	Average per farm	
	1935	1936
AVERAGE INVESTMENT	\$6875	\$7038
RECEIPTS		
Cash	\$746	\$924
Inventory increase	203	214
Total receipts	\$949	\$1138
EXPENSES		
Current operating	\$251	\$307
Labor	215	244
Livestock purchased	200	162
Inventory decrease	44	80
Depreciation	99	95
Total expenses	\$809	\$888
FARM INCOME	\$140	\$250
Interest on investment @ 5%	\$344	\$352
OPERATOR'S LABOR INCOME	—\$204	—\$102
Value family labor	\$126	\$140
FAMILY FARM LABOR INCOME	—\$78	—\$38
Non-farm receipts	\$132	\$199
Perquisites ¹	405	402
OPERATOR'S EARNINGS	\$333	\$499

¹In addition to \$298 as value of food furnished family by farm for either year, house rent was credited at the rate of 10% of the value of dwelling.

respectively. When these values are added to operator's labor income there remains a family farm labor income of minus \$78 for 1935 and minus \$38 for 1936.

In addition to the income as a result of agricultural pursuits, the average family in the Jackson area received income from non-agricultural sources to the extent of \$132 and \$199 for the two respective years. As a complement to its livelihood the average family also received perquisites in the form of house rent and farm products consumed by the farm family, valued at \$405 per farm in 1935, and \$402 in 1936. When these values were added to labor income there accrued an average operator's earning of \$333 and \$499 in 1935 and 1936, respectively.

Types of Farming⁶

In the preceding section of this study data have been presented for the same farms for the years 1935 and 1936. The objective has been to establish a basis for determining future trends in land use and agricultural production. In this section the factors that contributed to a more or less successful type of agricultural production on these

⁶Detailed statistical summary for all farms, by types, may be found in the Appendix.

farms will be pointed out. With these facts in mind it should be possible to evaluate the recommended program of soil and water conservation according to the manner and extent that it may affect the important factors of production. The implications of a program of this kind, in relation to production, will determine the feasibility of the program and the success that may be expected. For this purpose, the data for 1936 will be used.

The different types of farms in West Virginia account for much of the wide variation between farms in respect to their business organization and income. The type of production is determined largely by factors at least partially beyond the control of the farmer. Soil, topography, climate, location, size of farm, and the farmer's own preference are factors which influence the prevailing types of production. In many instances physical limitations do not permit the most profitable type of farm that might be desired by the farmer.

The most common type of farm in the Jackson area is the general farm, 49% of all farms being of this type. Few farms depended entirely on a single enterprise. General farms also contained about half the land in farms, with an average size of 178 acres. Self-sufficing farms were second in number but were third in amount of land included. Beef farms represented 33% of all land, while self-sufficing farms represented only 8% (Table 22). Poultry, dairy, and part-time farms were few in number but are important because of the different types of production which they represent. Poultry and dairy are more specialized farms, while part-time farms constitute homesteads rather than a definite type of agricultural production.

TABLE 22—*Types of farming on 187 farms in the Jackson area, 1936*

Type of farm	Number of farms	Percentage of farms	Acres in farms	Percentage of land in farms	Average investment
General	91	49	178	48	\$ 7,223
Beef	31	16	357	32	13,098
Self-sufficing	37	20	70	8	1,937
Poultry	11	6	181	6	4,780
Dairy	7	4	204	4	10,759
Part-time	10	5	80	2	3,586

The average investment ranged from \$13,098 for beef farms to \$1,937 for self-sufficing farms. The size of farms, which ranged according to type from 357 acres to 70 acres, was responsible for much of the difference in size of investment. However, the value of land ranged from \$37 per acre for dairy farms to \$15 per acre for self-sufficing farms. Likewise the value of buildings and amount of working capital varied widely. The self-sufficing farms and many smaller general farms represent very small business units. This condition together with the low quality of land and the lack of other resources constitutes obvious limitations to profitable production for many farms.

The amount, quality, and slope of the land available determine

TABLE 23—*Land-use by types of farms, 1936*

Type	Land-use—Acres				
	Crops	Pasture	Woodland	Other	Total
General	39	105	31	3	178
Beef	52	237	62	6	357
Self-sufficing	16	40	12	2	70
Poultry	41	100	37	3	181
Dairy	40	139	20	5	204
Part-time	12	48	18	2	80

to a large extent the type of agricultural production that is possible. Hence large farms with extensive pasture areas were generally beef-producing farms. Farms of a medium size conveniently located and possessing comparatively high productive capacity were generally dairy farms. General farms and poultry farms were very similar, both in land-use and production patterns, except that poultry farms specialized in that particular enterprise. In most cases the self-sufficing farms did not have much land available for either crops or pasture. Although probably originally low in value, destructive methods, combined with practically no effort to conserve the soil, continued to keep land values low. (Table 23.)

Like size of farm, cash farm receipts varied widely in amount. Dairy farms reported total cash farm receipts of \$3581, compared with \$174 for self-sufficing farms. Beef, poultry, and general farms ranked between the two extremes, in the order named. The sources of farm receipts did not vary greatly between the different types of farms. More than 90% of the receipts from all except general and self-sufficing farms was derived from livestock and livestock products. In the case of general farms, there were a few instances where truck and small fruits were sold, which accounted for a larger proportion of crop receipts. The limiting factor in farm production appeared to

TABLE 24—*Source of receipts and income by type of farms, 1936*

	Type of Farm					
	General	Beef	Self-sufficing	Poultry	Dairy	Part-time (abnormal)
Total cash farm receipts	\$798	\$1835	\$174	\$897	\$3581	\$193
Percent of total						
Crops	10.7	3.4	3.1	.4	1.0	3.7
Livestock	53.7	87.3	52.6	42.4	12.8	64.5
Livestock products	30.7	8.3	35.7	55.9	85.4	26.7
Miscellaneous	4.9	1.0	8.6	1.3	.8	5.1
Farm income	\$231	\$560	—\$36	\$187	\$1508	—\$299
Labor income	—\$137	—\$99	—\$133	—\$53	\$958	—\$477
Perquisites ¹	444	427	271	427	425	385
Non-farm receipts	175	275	66	155	180	739
Operator's earnings	\$482	\$603	\$204	\$529	\$1563	\$647

¹Includes value of food obtained from farm and house rent at rate of 10% of value of dwelling.

be the amount or volume of business rather than the kind of commodities produced.

Dairy farms produced the highest farm incomes, or an average of \$1508 per farm. Part-time and self-sufficing farms were the lowest, with minus \$299 and minus \$36, respectively. Beef, general, and poultry farms reported average farm incomes of \$560, \$231, and \$187, respectively. (Table 24 and Fig. 8.)

Dairy farms were the only type that earned an interest of 5% on investment, in excess of all production costs other than interest. All other types of farms, on the average, received minus labor incomes, ranging in amounts from minus \$53 on poultry farms to minus \$477 on part-time farms. There were, however, individual farms of each type which earned positive incomes.

In addition to labor income, the farm families received from the farm food and shelter valued at \$444 on general farms and \$271 on self-sufficing farms. As non-farm income, the beef farm operators received \$275 and the self-sufficing operators received \$66. These items, together with labor income, constitute operator's earnings in the amount of \$1563 for dairy farms, ranging down to \$204 for self-sufficing farms.

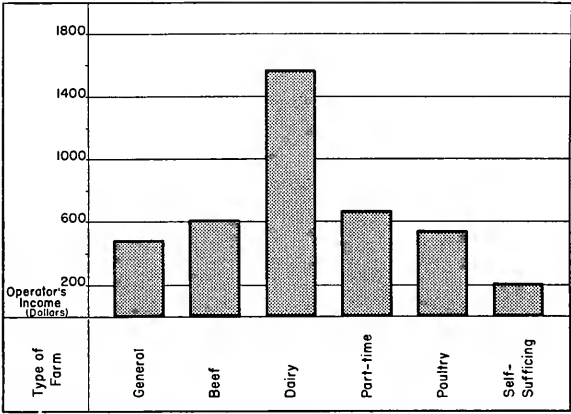


FIG. 8—Average operator's earnings by type of farm

GENERAL FARMS

Farms were classified as "general" if the value of products from any one source did not represent as much as 40% or more of the total value of all farm production and if they were not self-sufficing or part-time.⁷ Forty-nine percent of all farms were classified as general in the Jackson area for 1936. They represent about 48% of all land included in the survey. For purposes of analysis the 91 general farms were divided into three groups according to value of labor in-

⁷Refer to sections on self-sufficing and part-time farming for definitions of these types.

come earned. Data concerning the organization, physical characteristics, and income will be presented in an effort to point out the salient factors which affect profitable agricultural production.

Size of Business

Size of business determines the potential productive capacity on one hand and the actual current production on the other. The amount of physical investment may be sufficient, but if the volume of production is not of equally large proportions the large investment may prove to be a liability rather than an asset. This principle is plainly illustrated by data in Table 25.

The farms having highest labor incomes represented an investment about three-fourths as large as those farms having the lowest incomes, and they were about 20 acres smaller. On the other hand, the number of animal units maintained was the same, but the gross receipts were 28% higher, while expenses were 33% lower for those with highest labor incomes. This illustrates the advantage of using the investment to the fullest extent. A large investment producing less than its capacity is less productive than a smaller investment used more efficiently. There evidently was a definite lack of management on the larger farms with lowest labor incomes.

Contrasted with the farms having highest and lowest labor incomes, Table 25 shows an intermediate group which did not appear to possess the necessary scope, or size, of physical plant. The value of investment was low and the area in farms was not large enough to accommodate a business of sufficient volume for a high income. Normally, these farms would probably have been classed as having the lowest labor income, if the largest farms had produced in accordance with the size of their investment. The farms of small areas supporting fewer animal units, failed to produce sufficient gross income to justify the expenses incurred. It may be noted that the gross ex-

TABLE 25—*Relation of size of business to relative profitableness on general farms, 1936*

Measure of size	Average for 30 highest labor incomes	Average for 30 medium labor incomes	Average for 31 lowest labor incomes
Average investment	\$6988	\$5281	\$9329
Total farm acreage	186	142	205
Crop acreage	40	33	44
Pasture acreage	112	78	124
Number beef cattle ¹	7	2	5
Number steers	5	2	5
Total animal units	24	16	24
Total receipts	\$1331	\$770	\$ 952
Total expenses	688	640	1020
Farm income	643	130	—68
Labor income	284	—136	—546
Ratio of expenses to receipts	51.6	83.1	107.1

¹Includes beef cows and heifers.

TABLE 26—*Relation of pasture acreage available and other factors to income on general farms, 1936*

Acres of pasture	Average investment	Acres in farms	Acres in crops	Acres in pasture	No. animal units	Total expense	Total receipts	Farm income	Labor income	Acres of pasture available per A. U.
1-50	\$ 5,705	87	27	35	10	\$ 522	\$ 660	\$138	—\$148	7
51-100	4,950	134	36	71	16	664	761	97	—151	6
101-150	8,827	207	40	126	27	879	1396	517	75	6
151-over	11,503	297	52	198	32	1113	1402	289	—287	10

penses of these small farms were practically as large as those of the most profitable farms.

The outstanding virtue of the farms with intermediate incomes, in comparison with the larger low-income farms, was their small investment. Size of farm and investment are very important considerations in farm management. The unit should be large enough to support sufficient production, but not so large that it cannot be stocked and managed efficiently. It is quite possible to obtain a farm that is too large for one man, possessing limited credit and financial ability, to manage properly.

Economy in the production of good livestock under West Virginia conditions depends greatly on the pasture available. Because of the generally poor quality of pastures in this area, a large acreage is necessary to support a large livestock enterprise. The data in Table 26 illustrate the importance of having enough pasture to support a sufficient number of animal units for yielding a reasonably large income.

However, these data also illustrate the ill effects on income of large acreages of pasture that are not utilized fully. The larger farms did not maintain enough livestock to use all available pasture as efficiently as did the farms of medium size. On the large farms the average pasture load was one animal unit to 10 acres, while the more efficient farms of medium size maintained one animal unit to 6 acres of pasture. There were 72 acres more of pasture land available for only five more animal units on the least efficient larger farms than was true of the most efficient medium-sized farms. Possibly the pastures on the larger farms were not as productive as those of the farms of medium size. But this was not indicated by the corresponding crop index. The variation of the average crop-yield index for the farms in different groups was not wide enough to indicate significant differences in productivity, according to size of farms. Therefore it seems that volume of production, controlled largely by management, should correspond closely to the size of investment if profit is to be obtained.

The direct influence of volume of animal production is emphasized again in Table 27. Expenses do not increase directly as income increases coincident with an increase in the volume of production.

TABLE 27—Association of various factors with number of animal units maintained on general farms, 1936

Number animal units	Average investment	Acres in farms	Acres in pasture	Average number A. U.	Total expense	Total receipts	Farm income	Labor income	Crop index	Acres of pasture available per A. U.
1-12	\$ 4,745	101	54	9	\$ 563	\$ 533	—\$ 30	—\$267	69	11
13-24	6,469	166	96	18	726	921	195	—128	67	6
25-36	9,798	238	144	29	1066	1552	486	—4	69	5
37-over	12,900	300	193	48	1065	1611	545	—100	68	4

The farms maintaining the largest number of animal units that available pastures would support proved to be the most profitable. Pastures were utilized more fully and more income was produced. In contrast, by referring back to Table 26, the futility of large farms and extensive pasture areas, without an efficient number of animal units, may be seen. Many major overhead expenses remain about constant regardless of the efficiency with which land is utilized. Each additional unit of production costs less, and the percentage profit is greater up to the optimum productive capacity.

It is clearly illustrated in Table 28 that the volume of business, in the form of livestock receipts, had a greater and more direct effect on labor income than any other factor. Managerial and efficiency factors affect the comparative profitableness of the business. Certainly, large farms and pastures of high quality are necessary for supplying sufficient grazing to a greater number of animal units. These are prerequisite factors, but the amount of products sold is the most important factor in producing income. Since 88% of all receipts was derived from livestock and livestock products, it is evident that this source of receipts should be given primary attention.

Efficiency of Operation

In order that the larger farms can produce the greatest volume of income in the most advantageous manner, certain efficiency factors must not be neglected. The most important of these is the efficiency in the use of pastures. As previously pointed out, large areas of pasture may be available but if they are not efficiently used in the production of high-quality livestock the return on the investment will be low (Table 29).

TABLE 28—Relative importance of volume of livestock receipts and associated factors to income on general farms, 1936

Livestock receipts (dollars)	Average investment	Acres in farms	Acres in pasture	No. animal units	Total expense	Total receipts	Farm income	Labor income	Crop yield index	Acres of pasture available per A. U.
1-250	\$6055	130	76	14	\$ 632	\$ 695	\$ 63	—\$240	71	8
251-500	7386	176	98	21	754	950	196	—174	65	6
501-750	8827	198	123	23	905	1279	374	—67	69	6
751-over	8255	268	175	36	1083	1613	531	118	66	6

TABLE 29—*Relation of efficiency in use of pastures and other factors to income on general farms, 1936*

Acres of pasture available per A. U.	Acres in farms	Acres in pasture	No. animal units	Total expense per farm	Total receipts per farm	Farm income per farm	Percent earned on investment	Crop yield index	Average acres pasture per A. U.
2-3.9	151	66	24	\$775	\$1091	\$316	4.2	63	3.3
4-5.9	174	102	24	824	1116	291	3.6	70	4.8
6-7.9	177	115	20	841	995	154	2.0	66	6.7
8-over	210	138	14	654	778	124	2.0	71	15.0

A high rate of return on investment is shown to depend directly on the full and efficient use of pasture. The farms maintaining less than four acres of pasture per animal unit returned 4.2% on investments, while the farms maintaining eight or more acres of pasture per animal unit returned only 2.0% on investments. In other words, the farms which utilized the fewest acres of pasture per animal unit returned the highest net incomes. Although there was no indication that fertility was any higher on the most efficient general farms, improvement in the quality of pastures will undoubtedly aid more efficient production. Such improvement would provide greater efficiency in the use of land by making a greater return per acre.

In accordance with foregoing suggestions for an increase in the volume of production, it is shown that farm expenses did not vary in proportion to the variation in volume of receipts. It may be noted that the relative efficiency in the use of capital was responsible for a variation of more than 50% in the ratio of expenses to receipts. Many of the larger farms, necessitating relatively high overhead costs, were operated so inefficiently that volume of production was not sufficient to justify the high costs involved.

Only slight variations in prices received for farm products by the high- and the low-income groups were found. Nevertheless, it is well to keep in mind the fact that high-quality pastures and forage crops are necessary in producing livestock that will command "top" prices. Undoubtedly more attention to this factor would have a definite positive effect on labor income.

Organization and Combination of Enterprises

The organization of the enterprises on general farms was more or less similar regardless of size and efficiency of the unit. Major differences in income seemed to result from inadequate size and inefficient utilization rather than from kind or combination of enterprises. However, there was a tendency for the most profitable farms to possess an advantage in organization and operation. The data indicate that the most profitable farms had a greater proportion of their investment in productive livestock rather than in buildings and unused land. There was practically no difference in the value of land per acre between the highest and the lowest income groups.

The farms having the highest incomes had slightly less land in low-producing grains and more in hay than did the low-income farms. Because of very low crop yields and the depletion of soil by grain crops, it is probably undesirable to raise more grain than can be grown on available land of high-yielding ability. The most profitable farms gained a larger percentage of their gross income from livestock and less from crop production. This fact suggests again that land should be used for forage and pasture for the support of livestock. Crops for sale were losing enterprises because of their low productive advantage, compared with pasture and forage.

The least profitable farms expended twice as much for feed and labor as did the most profitable farms, while their gross receipts were 28% less. It is evident that the productive factors were poorly utilized on the least profitable farms. A general tendency in the direction of more intensive livestock production, accompanied by more efficient utilization of land for forage and pasture production, appears to be the need on those farms not operating profitably. The amount and quality of pasture and hay available will determine the relative profitableness of livestock farming in this area. More efficient use of labor, and improvement of soil productivity, by producing crops of higher comparative advantage and types of livestock en-

TABLE 30—*Organization of farm production according to income groups for 91 general farms, 1936*

Factor	Average for 30 highest income farms	Average for 30 medium income farms	Average for 31 lowest income farms
Percentage of investment in:			
Land	49.5	47.3	51.5
Dwelling	15.0	16.6	17.0
Farm buildings	12.1	13.6	12.3
Livestock	17.4	16.2	14.4
Other	6.0	6.3	4.8
Value of land per acre	\$23	\$22	\$24
Crop acreage	40	33	44
Percentage of crop land in:			
Corn	20.0	22.2	19.3
Wheat	10.3	10.9	12.9
Grain hay	2.6	3.1	2.9
Hay	58.0	56.5	51.8
Percentage of total receipts from:			
All livestock	56.8	49.8	53.1
Cows and heifers	9.1	9.4	10.1
Steers	11.9	10.4	11.5
Calves	4.3	6.0	4.5
Lambs	7.6	7.6	—4.5
Poultry	8.1	7.7	10.3
Livestock products	30.6	32.8	29.1
Crops	8.7	9.7	14.1
Percentage of total expenses for:			
Fertilizer and lime	5.1	3.9	3.3
Seed	4.2	4.6	4.0
Feed	11.1	11.2	13.5
Labor	34.0	34.9	44.0
Livestock purchased	24.3	17.9	13.0

terprises in accordance with the amount of land and other resources available, would undoubtedly increase the profitableness of the present less profitable farms. (Table 30.)

SPECIALIZED BEEF-CATTLE FARMS

Beef-cattle farms were those gaining 40% or more of their total income from this class of livestock. They were larger than farms of other types, consisting on the average of 357 acres. Thus a more extensive type of production, with respect to land use, is inherent. About 17% of all farms surveyed in the Jackson area were of this type, and they represented 33% of all land in the farms studied.

Size of Business

The data in Table 31 illustrate the importance of size of business. The farms with more acres and with more pasture seem to have produced a greater number of animal units from which practically 90% of all farm income was derived. It must be noted, however, that acres in farms and pasture are important only insofar as they are available in sufficient quantities for the profitable production of beef animals. Hence, the amount of income produced depends on the number of animal units that can be handled economically. Sufficiently high yielding pastures are requisite to such production.

A direct comparison of the average cash receipts of the most profitable and least profitable farms follows:

	<i>Average value of sales</i>			
	<i>Cows</i>	<i>Heifers</i>	<i>Calves</i>	<i>Steers</i>
15 most profitable farms -----	\$156	\$135	\$230	\$1161
16 least profitable farms -----	122	75	106	742

These four items constituted slightly less than 80% of all cash receipts. Hence the less profitable farms seem to have lacked the volume of business that was needed to produce a high labor income.

TABLE 31—*Relation of size of business to relative profitableness of beef farms, 1936*

Measure of size	Average for 15 farms with highest labor incomes	Average for 16 farms with lowest labor incomes
Average investment	\$14,572	\$11,887
Total farm acreage	402	314
Crop acreage	57	47
Pasture acreage	261	214
Number beef cattle ¹	41	25
Number steers	21	17
Total animal units	53	35
Total receipts	\$3,008	\$1,598
Total expenses	1,804	1,642
Farm income	1,204	—44
Labor income	475	—638

¹Includes beef cows, heifers, and steers.

TABLE 32—*Relation of number of animal units and associated factors to income on beef farms, 1936*

Number of animal units ¹	Acres in farms	Acres of pasture	No. animal units	Total receipts	Total expenses	Farm income	Labor income	Average investment	Percent earned on investment
0-29.9	195	130	20.9	\$1024	\$1080	—\$ 56	—\$418	\$ 7240	—0.7
30-59.9	322	224	39.8	2469	1651	818	137	13623	6.0
60-over	674	428	77.2	3905	2856	1049	—36	21719	4.8

¹Animal units pastured.

It may be noted (Table 32) that high farm incomes were associated with larger units of production, but the proportionate increase in income on the larger farms was not sufficient fully to justify the greater investment in the extremely large units. Highest incomes seemed to be associated with business units of an intermediate size that can be financed and managed more efficiently. This fact is further emphasized in Table 33. The larger farms did not have gross receipts of sufficient volume to justify the additional expense that was involved in the larger investment. This leads to the suggestion that there was an appreciable degree of inefficiency associated with the operation of the larger farms although they were not completely unprofitable.

Efficiency of Operation

Inefficiency in the production of pasture appears to account for low labor incomes to a greater degree than any other factor on beef farms, assuming that size of unit is large enough to be profitable. High-yielding pastures eliminate the necessity of a greater investment in a large area of low-yielding land.

It may be noted in Table 34 that, in general, farms having the largest pasture acreage per animal unit received the lowest labor incomes. The deficiency might be attributed to understocking of the larger pastures. However, a low pasture load was invariably associated with low crop yields on these farms. This combination of facts seems to indicate that there is definite need for pasture improvement on some farms which would enable the efficient production of a larger number of income-producing livestock.

TABLE 33—*Association of various factors with acreage of pasture on beef farms, 1936*

Acres of pasture	Acres in farms	Acres in pasture	No. animal units	Total receipts	Total expenses	Farm income	Labor income	Average investment	Percent earned on investment
1-150	176	103	24.1	\$ 910	\$ 954	—\$ 44	—\$374	\$ 6594	—0.6
151-300	308	209	41.8	2908	1895	1013	287	13482	7.5
301-over	661	449	71.3	2973	2395	578	385	19262	3.0

TABLE 34—*Association of pasture acreage per animal unit and other factors with income on beef farms, 1936*

Acres pasture available per A. U.	Acres of pasture per A. U.	Crop yield index	No. animal units	Acres of pasture	Total receipts	Farm income	Labor income	Percent earned on investment
2-3.9	3.3	79.8	49.8	167	\$3333	\$1014	\$214	6.3
4-5.9	5.0	69.7	43.1	201	1879	396	—172	3.5
6-7.9	6.5	63.5	50.6	311	2359	673	—118	4.3
8-over	11.4	63.3	29.2	331	2047	340	—249	2.8
2-5.9	4.5	72.8	45.2	191	2315	582	—56	4.5
6-over	8.7	63.4	40.9	320	2217	521	—177	3.7

It is important to note that expenses did not increase in direct proportion to the increase in farm income on the more profitable farms. The necessary overhead costs remain about constant on both profitable and unprofitable farms. The less profitable farms had a larger investment than the more profitable farms, while their production was almost 50% lower. (Table 35.)

In addition to efficiency of farm production, there appeared to be a slightly higher grade of livestock produced on some farms than was true of others. The prices received for steers and heifers by the more profitable farms was \$68 and \$62 per head, while low-income farms received only \$61 and \$50 per head, respectively. These two items constituted more than 60% of all cash receipts on beef farms.

Organization and Combination of Enterprises

There were only slight differences in the organization of enterprises on the high- and the low-income producing farms. Specialized beef production seemed to be organized in about the same general proportions, regardless of size and efficiency of unit, with few exceptions. There was no significant difference in the distribution of total investment on high-income farms versus low-income-producing farms, except in the case of livestock. The former possessed about four percent more of their total investment in livestock, which was the basic and major source of income. Greater income undoubtedly resulted from this arrangement. (Table 36.)

TABLE 35—*Ratio of expenses to receipts on high- and low-income-producing beef farms, 1936*

Income group	Total receipts	Total expenses	Ratio of expenses to receipts
15 farms with highest labor income	\$3008	\$1804	59.9
16 farms with lowest labor income	1598	1642	102.7

Although the average crop acreage was less on the low-income farms, a larger percentage of their total receipts was from crop sales. The crop yield index was also much lower on these farms. As a result, cash crop production was unquestionably a very inefficient and unprofitable use of the land. There is general need for higher yields of grain and hay which may be fed to livestock.

The proportion of total receipts from the various livestock enterprises was about the same on both groups of farms. However, there was a slight tendency for the most profitable farms to obtain a greater proportion of their income from steers, rather than from other classes of livestock.

Conclusions for Beef-Cattle Farms

1. A medium-sized farming unit of between 200-250 acres of pasture with 45 to 55 animal units seemed to be the most efficient.

2. The most profitable farms apparently were those with the best grade of pastures.

3. There appeared to be a definite need for pasture and crop-yield improvement in order to make farming profitable in this area.

TABLE 36—*Organization of high- and low-income-producing beef farms, 1936*

Factor	Average for 15 high labor- income farms	Average for 16 low labor- income farms
Percentage of investment in:		
Land	54.7	57.9
Dwelling	9.5	11.4
Farm buildings	13.1	12.7
Livestock	19.3	15.4
Other	3.4	2.6
Value of land per acre	\$23	\$22
Crop acreage	57	47
Percentage of crop land in:		
Corn	16.6	15.8
Wheat	16.9	10.9
Hay	63.8	68.8
Percentage of total receipts from:		
All livestock	88.7	89.1
Cows and heifers	13.4	13.5
Steers	53.4	50.9
Calves	10.5	8.1
Lambs	2.7	1.7
Livestock products	11.2	4.3
Crops	1.7	5.9
Percentage of total expense for:		
Fertilizer and lime	5.6	7.0
Seed	4.9	5.9
Feed	20.6	17.9
Labor	43.2	52.9

SELF-SUFFICING FARMS

Self-sufficing farms are those farms on which the value of farm products consumed by the family is 50% or more of the total value of all farm production. The term "self-sufficing" is indicative of size of business rather than type of production. In terms of production they are small general farms. Twenty percent of all farms surveyed were classed as self-sufficing in the Jackson area. Their average size was 70 acres.

Insufficient size necessarily limits and handicaps most types of agricultural production. Average units of 16 acres of crop land and 40 acres of very low quality pasture land definitely limit commercial production. Owing to a minimum of economic resources and credit from which to draw, the majority of such farms were capable of producing little more than a bare subsistence for the families.

The original productive capacity of most farms of this type has been reduced greatly by methods of farming that did not conserve fertility. Constant cropping on slope, the use of practically no lime or fertilizer, the inclusion of few legume or soil-building crops in the

TABLE 37—*Investment possessed by more profitable and less profitable self-sufficing farms*

Item	Average for 18 more profit- able farms	Average for 19 less profit- able farms
Total investment	\$1445	\$2400
Percent in land	52.8	44.1
Percent in dwelling	17.3	24.3
Percent in farm buildings	8.8	13.7
Percent in livestock	17.5	14.7
Percent in other	3.6	3.2
Value of land per acre	\$14.28	\$15.30

production program, and unwise methods of cultivation have contributed to reducing yields seriously. Much of the present pasture land was formerly cropped until, because of depletion, it would no longer produce acceptably. The present situation is that all land has been seriously depleted, and no new land for crops is available in most instances. These farmers have been cut off from practically all sources of cash income, and their future economic condition will depend on their frugality, thrift, and ability to gain from their small farms the necessities of life.

Size of Business

The average investment in the more profitable self-sufficing farms was \$1445, compared to \$2400 for the less profitable. Significant in its implication, a greater proportion of the smaller investment was represented by land and livestock which were productive; while the larger investments consisted of dwellings and farm buildings in

greater proportions. However, the difference was small and only slightly indicative of greater productive efficiency, inasmuch as the value of land was about the same for both highest and lowest income groups. (Table 37.)

The size of the farm business was small for all self-sufficing farms. The more profitable ones consisted of smaller business units, having less acreage and fewer animal units of a different type that could be managed to greater advantage. It is clear that neither group possessed the physical basis for extensive production. There is definite need for intensified effort in producing more income and in improving the small acreage of available tillable land. (Table 38.)

TABLE 38—*Comparison of size of business on self-sufficing farms, 1936*

Measure of size	Average for 18 more profit- able farms	Average for 19 less profit- able farms
Acres in farms	66	74
Crop acreage	14	18
Pasture acreage	37	43
Number animal units	5.0	6.8

Organization of Farms

The more profitable farms were organized on a more extensive plan than were the less profitable. They raised more corn and less hay and small grain, which was needed to maintain more poultry and fewer cattle. The less profitable self-sufficing farms were very small, inefficient livestock farms. (Table 39.)

The fact that the less profitable farms were endeavoring to produce cattle and hogs in excess of home needs seems to be indicative that they were organized improperly. Obviously, beef cattle and hogs cannot be produced profitably on a small scale. This is true because the costs per unit were necessarily excessive while the percentage of profit was small.

Yields and Production

Crop and pasture yields were extremely low on the self-sufficing

TABLE 39—*Organization of more profitable and less profitable self-sufficing farms, 1936*

Content	Average for 18 more profitable farms	Average for 19 less profit- able farms
Crop acreage:		
Percent in corn	40.4	24.6
Percent in small grain	5.9	15.4
Percent in hay	42.9	52.3
Livestock:		
Number cows and heifers	2.0	3.0
Number steers	.4	.6
Number hogs	1.4	2.5
Number chickens	65.0	59.0

farms. Based on the average yields for the state from 1923 to 1932 as 100, the average yield index on the more profitable farms was 49, and 44 on the less profitable. The number of animal units pastured per acre was about half that of the average carrying capacity of pastures in the state. (Table 40.)

TABLE 40—*Crop and pasture yield index and cash receipts on the more profitable and less profitable self-sufficing farms, 1936*

Item	Average for 18 more profit- able farms	Average for 19 less profit- able farms
Crop index	49.1	44.2
Acres pasture per animal unit	11.5	8.5
Total cash receipts	\$167	\$181
Percent livestock	42.8	61.1
Percent cattle and calves	14.7	35.5
Percent pigs	1.5	6.0
Percent poultry	23.7	9.4
Percent livestock products	38.8	32.8
Percent crops	3.9	2.6
Percent miscellaneous	14.5	3.5

The total cash receipts on these farms were exceedingly small. However, the more profitable farms produced the least average gross cash income. The greatest variation in sources of receipts between farms was between the various livestock enterprises. The more profitable farms derived the major portion of their cash receipts from poultry and eggs, while the less profitable derived their cash income from cattle and hogs. The less efficient group received an average of \$17 from poultry while the more efficient collected \$40 per farm from this enterprise. This illustrates the need for a change in organization of the less profitable farms, from cattle to smaller enterprises, requiring less grain and forage per unit of production. Poultry appears to offer one possibility. The scarcity of farm-grown feed and the relatively high price of purchased feed on these small, low-yielding farms makes the production of gains on cattle and hogs very unprofitable. Therefore, these small farms must be made to produce enough grain and forage for small enterprises by proper land management. (Table 41.)

It is significant that self-sufficing farms had less garden, truck, and fruits than the usual farm in the area. On the other hand, it is logical to assume that they should have more of such production than farms with more cash income. A general increase in this type of production would certainly enhance the income and general food supply of these farmers, and could be raised on the limited land area available.

Expenses and Income

Expenses on the less profitable farms showed a tendency to exceed receipts. The cost of livestock and feed purchased was excessive, considering the income received. Labor costs were also exces-

TABLE 41—*Garden, truck, and orchard grown on self-sufficing farms compared to other types of farming, 1936*

Type of farm	Average acreage per farm		
	Garden and truck ¹	Orchard	Small fruits
SELF-SUFFICING ²	.71	.74	.02
General	1.24	1.89	.07
Beef	.86	1.10	..
Dairy	1.47	1.36	..
Poultry	1.04	1.34	..
Part-time	.83	1.35	..
Average all types	1.05	1.45	.04

¹Includes potatoes.

²Average size of self-sufficing families was consistent with other types.

sive for the lowest income group, about two-thirds of which was the charge made for family labor. Consequently, there seems to be sufficient labor available to do a much more intensive type of farming than prevailed in 1936. It is evident that labor and feed were expended on low-yielding enterprises, which resulted in a low total return per farm. (Table 42.)

The more profitable farms made a positive farm income and a labor income of \$20 after paying 5% on their investment. The investment in these farms was small, and the sources of receipts were more in line with the size and quality of resources available. In addition to an average labor income of \$20, these farm operators made total earnings of \$287, including \$223 as perquisites and \$44 as non-farm income.

In contrast, the less profitable farms did not have enough receipts to balance the expenses. Therefore they lost money, allowing nothing for the capital invested or for the operator's labor and management. The average farm income was —\$157 and the average labor income —\$277. The value of perquisites and non-farm receipts resulted in an average operator's earnings of \$45 per farm.

TABLE 42—*Expenses and income of more profitable and less profitable self-sufficing farms, 1936*

Item	Average for 18 more profitable farms	Average for 19 less profitable farms
Total cash expenses	\$119	\$288
Percentage for fertilizer, lime, and seed	2.5	6.5
Percentage for livestock purchased	17.6	15.2
Percentage for feed purchased	33.8	20.8
Percentage for labor cost	27.7	47.2
Total expenses	\$141	\$375
Total receipts	233	218
Farm income	92	—157
Labor income	20	—277
Perquisites	223	235
Non-farm receipts	44	87
Operator's earnings	287	45

POULTRY FARMS

Eleven of the farms surveyed received 40% or more of their total farm income from the poultry enterprise. Although their number is small, this type of farming is important from the standpoint of a developing enterprise, where the demand for their products was reasonably good. The lessening ability of the smaller farms to maintain reasonable incomes from heavier livestock enterprises has led some general farmers into the production of chickens and eggs. Some have made the enterprise their major source of income.

The size of business unit and organization of production on poultry farms resembled that on the general farms in the same area, with the exception of slight differences in sources of income and the amount of investment. The average investment in poultry farms was \$4780, or about two-thirds that of general farms. The proportion of the total investment represented by various capital items was similar to that on general farms, except that the dwellings were more valuable and the land of less value. The average value of land was \$18 per acre, which was very low considering that some land in the area was rated twice as valuable. However, the crop yield index was only 60 for these farms.

The size of farms and land-use signified a combination of general farm production with the major poultry enterprise. Each farm possessed an average of 15 animal units, slightly more than one-fifth of which was poultry. The usual combination of the minor enterprises was similar to that on general farms, except on a smaller scale. Low

TABLE 43—*General characteristics of specialized poultry farms in Jackson area, 1936¹*

	Average per farm
Number of farms	11
Average investment	\$4780
Size of farm (acres)	181
Crop land (acres)	41
Pasture land (acres)	100
Number of animal units	15
Crop index	60.1
Pasture per animal unit	6.8
Total cash receipts	\$897
Livestock receipts	\$381
Percentage from poultry	52.7
Livestock products	\$501
Percentage from eggs	91.5
Total cash expenses	\$340
Percentage from feed	62.3
Total farm receipts	\$1009
Total farm expenses	822
Farm income	\$187
Labor income	—53
Value of perquisites	427
Non-farm income	155
Operator's earnings	529

¹Refer to Appendix for complete statistics on poultry farms.

yields of crops and forage had evidently made it more desirable to depend on poultry, as a more intensive productive unit, than on general livestock. Farm receipts were more regular throughout the year, while receipts from beef cattle were periodic.

The average total cash receipts on poultry farms were \$897. Livestock sales represented \$381, of which 53% was from poultry. Livestock products accounted for \$501 per farm, of which 92% was receipts from eggs. (Table 43.)

Feed costs constituted 62% of all cash expenses on these farms. However, this does not seem excessive when the total cash expenses are compared with total receipts. It is evident that these farmers found it more desirable to purchase a portion of their concentrated poultry feed than to purchase both bulky and concentrate feeds for cattle and hogs, from which their rate of return would be much less. A unit of feed fed to poultry will return a greater value in salable products than when fed to beef cattle.⁸

The average farm income for poultry farms was \$187, which lacked \$53 of equaling a 5% return on the average investment. As a result, there was no return to the operator for his labor and management. The total of labor income, perquisites, and non-farm receipts made the average operator's earnings \$529. These earnings represent the return to the operator after deducting a charge of 5% for the use of capital.

Poultry farms were generally profitable to the extent that available labor was used with a fair degree of efficiency, and the returns on a small investment were sufficient to make possible a reasonable standard of living for the farm family.

PART-TIME FARMS

Part-time farming is a type of agriculture in which the farm operator spends at least the equivalent of 150 days at work not connected with his farm, provided the total value of products from the farm does not exceed \$750. This type of farming prevails in industrial areas where farming can be made a supplementary source of income.

The organization of this type of farming is quite like that of self-sufficing farms. The units are small, land is generally of low value, and productivity is not maintained, while practically all products are consumed on the farm. Their average size was 80 acres, 15% of which was crop land, and 60%, pasture. (Table 44.)

The productive capacity of most of these farms was very low, resembling that of self-sufficing farms in most cases. The average crop index was 41.9, with eight or more acres of pasture per animal unit. It is evident that these small farms of low-yielding land are not capable of producing profitably under an extensive system. However, more than 50% of their total farm receipts was derived from heavy livestock in 1936, while poultry produced 40% of all cash receipts.

⁸Henry and Morrison, *Feeds and Feeding*, 19th edition, p. 92, The Henry-Morrison Company, 1928.

TABLE 44—*General characteristics of part-time farming in the Jackson area, 1936¹*

	Average per farm
Number of farms	10
Average investment	\$3586
Size of farm (acres)	80
Crop land (acres)	12
Pasture land (acres)	48
Number of animal units	5.7
Crop index	41.9
Pasture per animal unit	8.4
Total cash farm receipts	\$193
Livestock receipts	124
Percentage from poultry	17.9
Livestock products receipts	\$52
Percentage from eggs	67.3
Total cash farm expenses	\$209
Percentage for feed	43.1
Total farm receipts	\$221
Total farm expenses	520
Farm income	—\$299
Labor income	—477
Value of perquisites	385
Non-farm income	739
Operator's earnings	647

¹Refer to Appendix for complete statistics on part-time farms.

The area devoted to garden and truck averaged about 0.83 of an acre per farm. Since this type of farmer is seeking a more satisfactory livelihood by living on a farm, it seems that by expanding the same amount of labor and capital on more intensive production such as truck, poultry, and small fruits, earnings could be increased. Such enterprises could be confined to the best available land, while the land of poorer quality could be improved by extensive methods requiring a minimum of effort.

In 1936 about 43% of the total cash expenses was expended for feed, a major portion of which was for inefficient cattle production. It is possible that a greater part of this expenditure for poultry feed would produce a much greater net income.

Part-time farms were generally operated at a loss, from the standpoint of both farm income and labor income. However, the value of perquisites consumed by the farm family exceeded the loss in farm income. Perquisites in the amount of \$385 together with average non-farm receipts of \$739 netted the farm operators average earnings of \$647.

Undoubtedly, greater operator's earnings could be derived if more attention were given to improving soil productivity, and producing types of enterprises more adapted to the size of farm and the labor available. Certainly some attention should be given to land-use practices which would improve and prolong the productivity of the land that is now available for this type of livelihood.

DAIRY FARMS

Specialized dairy production is practiced by only a few farms in this area. Seven farms were classified as obtaining 40% or more of their total receipts from the dairy enterprise. The most economical production of dairy products, like efficient beef-cattle production, requires pastures of reasonably high quality, together with good forage. Consequently, the low-quality pasture and meadow land, representing a large portion of this area, is not particularly adapted to dairy farming. However, in many instances improvement in the quality of pasture and forage might provide the requisites for profitable dairy production. The average crop yield index and the average animal units maintained per acre of pasture were higher for dairy farms than for any other type of farm. This signifies that such requisites are recognized. As a result, dairy farming at present is limited to the higher-quality land.

The average size of dairy farms was 204 acres, or about a third smaller than that of beef farms. Their average investment also was appreciably less than on the larger beef farms. With this exception, dairy farms exceeded all other types in size and value. There were about 139 acres of open pasture available per farm for 17 dairy cows, in addition to nine animal units of other livestock. (Table 45.)

Cash farm receipts were considerably larger on dairy farms than

TABLE 45—*General characteristics of specialized dairy farms in Jackson area, 1936¹*

Item	Average per farm
Number of farms	7
Average investment	\$10,759
Average size of farms (acres)	204
Crop land (acres)	40
Pasture land (acres)	139
Animal units	26
Dairy cows (number)	17
Crop index	89
Pasture per animal unit (acres)	5
Total cash farm receipts	\$3581
Livestock receipts	461
Percentage from cows	44
Livestock products receipts	\$3057
Percentage from milk	93
Total cash expenses	\$1416
Percentage for feed	63
Total farm receipts	\$3997
Total farm expenses	2489
Farm income	\$1508
Labor income	958
Value of perquisites	425
Non-farm income	180
Operator's earnings	1563

¹Refer to Appendix for complete statistics on dairy farms.

on any other type. More than 90% of all receipts were derived from the sale of milk and dairy cows. This type of farm is more specialized and depends to a greater extent on a single enterprise than any other type of farm. However, milk is in general demand throughout the year, with only minor variations in demand from year to year. Thus the demand for production of this type is probably more stable than for any other commodity produced in the area.

Coincident with a large volume of receipts per farm, the expenses were comparatively low. Farm income exceeded that of beef cattle farms threefold. It is quite possible that present expenses can be diminished by producing a higher quality of forage which may partially replace a feed bill that represented 63% of all expenses in 1936. In this case, farm income could be further increased.

Dairy farms were the only type of farms to produce an average positive labor income, which was \$958 per farm. In addition, the farms furnished perquisites valued at \$425 per farm, and the farm operators derived an average of \$180 from non-farm sources. Thus operator's earnings amounted to \$1563 per farm. It is pointed out that this sum was the amount remaining to pay the operator for his labor and management after all expenses and a charge of 5% for the use of capital had been deducted from receipts.

Unless there are definite and permanent limitations to the expansion of the dairy industry in this section, there undoubtedly will be an increase in the number of dairy farms in the future. Large capital requirements, lack of knowledge of the industry, and a scarcity of good land represent practical handicaps to a rapid expansion of dairy farming in this area. The improvement of pastures and higher quality legume forage may encourage the expansion of this type of farming.

The Program of Soil Conservation in the Jackson Area

The general program of the Soil Conservation Service is reviewed briefly in the following discussion in order that it may be possible to point out clearly the association of its various phases with the factors of production.

(1) Pasture Improvement

On June 1, 1937, 68 farms consisting of 15,730 acres were under five-year agreements in this area. A total of 9,798 acres of pasture land had been converted from uncontrolled to controlled management. This type of management may be partially illustrated by the following excerpts from an agreement: (a) "All pasture land under agreement suitable for mowing will be mowed the last of June and again the first of September if necessary to control weeds." (b) "Livestock will be removed sufficiently early in the fall to insure growth for winter protection, and will not be turned on in the spring until pas-

tures are started sufficiently to prevent injury." Pasture rotations are to be followed where needed and possible.

A total of 561 acres of pasture had been completely reseeded; 389 acres treated with lime and superphosphate; and 355 acres treated with mixed fertilizer, according to needs of various local conditions. In places where pasture sods are weak and slopes are steep, the land is contour-furrowed to retard run-off and to facilitate the percolation of water into the soil. These methods are designed to make possible the grazing of reasonably steep land without permitting continuous unchecked erosion to destroy future productivity.

The improvement of pastures by better management, fertilization, liming, reseeded, mowing, according to definitely planned programs, is essential for erosion control in this area, and will undoubtedly enhance farm production. Pastures are the foundation of agriculture in this state. The efficient growing of a greater number of animal units, of better quality, undoubtedly will contribute to higher incomes. The proportion of the total agricultural income which is derived from livestock has increased from about 50% to 70% during the last decade. During the same period the total agricultural income of the state has decreased. Consequently livestock and the necessary maintenance constituents are growing in importance. Obviously how far to go in outlays of cash and other resources for such pasture improvement is a question confronting the farmer.

(2) Yield Improvement

Another objective of soil conservation is to improve hay and grain yields by rotation of fertility-building crops, fertilization and soil and moisture conservation. These will contribute to the efficient production of livestock and improvement of farm income. Yields of both hay and grain have been exceedingly low in past years. Hence crops of high-yielding ability together with improvement of soil fertility are urgently needed. In order that soil depletion may be checked and productive capacity increased, systematic crop rotations, providing better soil cover for preventing erosion, have been planned for 2,821 acres, or three times the amount of land that was cultivated and managed systematically before the agreements were signed.

(3) Improvement and Conservation of Soil Fertility

The conservation program plans the improvement and conservation of soil fertility by growing soil-conserving and fertility-building crops. The 68 farms had 2,005 acres of cultivated or non-erosion-resistant crops. This acreage was reduced to 1,304 acres, or 35%, by the conservation agreements. Semi-erosion-resistant small grains are planned to be increased from 351 acres to 596 acres, or 70%. Erosion-resistant hays and forage crops have been increased in acreage from 742 to 979, or 32%. The acreage of permanent legume hays were increased from 526 to 905 acres, or 72%. These erosion-resistant crops will replace cultivated crops where possible.

These changes, from a type of production conducive to soil erosion and fertility depletion, to erosion-resistant and fertility-building crops appear to be in accord with the general needs for correcting land abuse in the area. In addition, legumes should build up the nitrogen content of soil, which is invaluable in forage and pasture production.

(4) *Lime and Fertilizer*

Lime and fertilizer have been applied to all land sown to legume hays. Both hay and grain yields will eventually profit by reason of these practices, as grain will follow legume hays in the planned rotations.

However, unless there is comparatively level land available for grain production in excess of that needed to grow sufficient hay, grains are to be largely purchased. The tendency, therefore, is toward less acreage of concentrate grain feeds on low yielding land. With the exception of small, self-sufficing farms, grain feeds required should largely be purchased. Grains can be purchased to a greater advantage than hay. It is entirely possible that alfalfa and clover hays of comparatively high quality may effectively replace an appreciable amount of the grain now fed to dairy cows and other cattle. But enough grain should be produced for hogs and chickens to be consumed by the farm family, particularly on the small farms.

(5) *Farm Organization and Management*

The planned programs of conservation for individual farms include features of farm organization and management which should contribute to more efficient long-time production. Land use and cropping patterns are organized so that the various crops and pasture are grown on the soil for which they are best adapted. Systems of crop and pasture rotations are planned for the improvement of soil fertility, greater productive efficiency, and the retardation of erosion. If such plans are correctly made they will improve the balance of production, and will contribute to the more efficient utilization of all resources for the continued production of income. It may be well to state that the organization of all minor and supplementary or complementary enterprises must be planned so as to contribute the most to the efficient production of the major enterprise.

(6) *Vegetation and Cover*

The plans for conserving soil and water are designed to provide an erosion-resistant cover of some desirable nature for **all land** which will retard run-off of rainfall and check soil depletion.

(7) *Engineering*

In addition to management and better agronomic practices, cer-

tain engineering features of the conservation program are planned. (a) Strip-cropping of sloping land that must be used to grow crops is intended to check erosion and to encourage percolation of water into the soil. About 494 acres of crop land will be strip-cropped on the 68 farms. This practice should conserve soil fertility and crop yields over a period of years. (b) Contour furrows for pasture land and drainage areas for crop lands are installed to retard sheet erosion and gullyling, and to increase the percolation of water into the soil instead of permitting it to escape unused over the surface. These measures serve a definite need if constructed properly and given proper attention as the program progresses.

(8) *Forest Plantings*

In addition to engineering structures, forest plantings are provided to protect and improve severely-eroded areas and to produce desirable wood and timber for the farms. The introduction of new plants having unusual ability to protect areas that normally erode rapidly will tend to reduce the total amount of soil erosion.

In general, the entire program of soil and water conservation is designed to conserve the resources of agriculture, the principal one of which is soil productivity. The above data, showing the scope and extent of applied conservation measures on the 68 farms, anticipate the completion of all stipulations set forth in the respective contracts. Not all have been completed to date. Some changes are comprehensive in nature and may require several years for completion.

FARM PLANNING

Erosion control and conservation practices must be evaluated in light of the physical and economic organization of the farm unit. The farmer, in most instances, cannot adjust his program suddenly, and possibly may not be able to do it at all if his farm does not offer the necessary physical and economic basis for shifting sources of income from soil-depleting enterprises to soil-conserving enterprises.

The application of an erosion control program must be on the basis of the individual farm. All farms cannot be made to fit a uniform standard program. Each farm is a separate economic production and consumption unit which must not be ignored in attempts at conservation. The farm as a crop and livestock producing unit, must continue to be used for gaining a livelihood. The best erosion-resistant cover that possibly could be grown on a given farm probably would be forest or a good pasture sod, but farmers cannot live by these alone. In order that conservation practices may be accepted they must become part of a well-balanced farm organization program which will permit the farm family to live better and with greater security than was possible under the soil-depleting system of production.

If the recommended program of conservation will not maintain

or enhance the farmer's economic status, the facts must be admitted. The present need is to give economic sufficiency to the farmer now on the land. However, it undoubtedly is possible to develop a satisfactory program of soil conservation that will enhance farm income and standards of living in most farming areas if proper attention is given to balancing the production program according to both the agronomic and livestock needs of the farm. Where this is not possible non-agricultural land uses should be provided, and farming should be discouraged.

The type of production cannot be changed on many farms because of limited land resources. The small general-self-sufficing farm must raise a variety of commodities for family use. Corn and wheat are almost essential to their proper functioning, just as pasture and forage are essential to beef and dairy farming. The small farms must be made to produce as much as possible, with proper attention to conserving soil fertility. They cannot specialize in grass or grains. A balanced program of production must be followed that will furnish food to the family, and grains to poultry, hogs, and a small number of other livestock. Owing to the lack of production for sale or exchange the small farms should be as independent and self-sufficing as possible, requiring a minimum of purchased supplies.

Care should be exercised in replanning farms so that crop rotations function properly. In converting crop land to meadow the change should be worked into the rotation gradually in order that the proper balance is maintained between grain and forage crops in all succeeding years. Farm organization cannot be changed suddenly from year to year. The volume of grains and forage should be produced in about the same proportions each year to suffice the needs of a more or less stable livestock program. A well-planned farm program should be a completely "well-rounded" production schedule, suitable to proper land use, soil and water conservation, the economic resources of the farmer, and the production needs of both livestock and the farm family.

Summary

The nature of the development of agricultural production in West Virginia has been responsible for the evolution of many problems in connection with land use. The misuse of land, wasteful cropping practices, and lack of practical management have resulted in low-yielding crop and pasture land. Erosion of soil has practically destroyed many acres of sloping land and has depleted a larger area of much of its most valuable productive capacity. As a result, production has become more inefficient and farm income has been decreasing. Likewise the security of the people has been jeopardized.

The inception of the Soil Conservation Service was a move by the Federal Government to assist the farmers in solving the problems of soil and water conservation. This agency has established eight demonstration areas in West Virginia for demonstrating the best

methods of erosion-control and soil-building practices.

The Jackson area, S.C.S.W.VA.-6, is studied here as typical of the problems in soil conservation, and typical of the work being undertaken. In this demonstration area several methods of attack are being demonstrated. In general they consist of:

- (1) using land for the purpose to which it is best adapted;
- (2) decreasing the acreage of non-erosion-resistant crops on sloping land that is subject to serious erosion;
- (3) introducing erosion-resistant crops to take the place of grains and low-quality hays which do not supply the sloping land with sufficient uniform cover;
- (4) improving soil fertility of both crop and pasture land by liming, fertilization, crop management and rotation, and growing adaptable crops;
- (5) using engineering methods and field arrangement for the control of sheet erosion and gully washing;
- (6) managing all land, including forests, waste land, and farm land to provide the best cover that is possible and practical to maintain for the retardation of erosion.

Analysis of agricultural production in this area indicates that the most outstanding needs from an economic standpoint are: (a) more efficient production of good-quality pasture and hay for support of the more profitable livestock enterprise; (b) general improvement in crop and pasture yields; and (c) definite changes in systems of management, types of crops grown, and farm organization on the farms of different types.

The opportunity to utilize available labor and land resources to best advantage apparently exists in poultry and dairy production, where land suitable for pasture and forage is limited. Specialized beef cattle, sheep, and general livestock production are suitable only for larger farms. With varying physical resources and different economic advantages, all farms cannot be of one type. The success of the smaller farm depends on the utilization of its limited resources in a comparatively intensive manner, employing proper conservation practices while producing a self-sufficient livelihood for the farm families that depend on them.

It appears that the work of the Soil Conservation Service may demonstrate methods of satisfying the above needs and for correcting the misuse and abuse of land prevailing in the area. The planned programs will undoubtedly have a positive effect in the improvement of the land resources upon which the major agricultural enterprises of the state depend. As a result, agricultural production should be improved, if the plans are properly made, consistent with needs of various types of farms, to the extent that annual farm income will be maintained or increased. The improvement and maintenance of soil fertility should prolong the period of usefulness of the soils. Consequently, the standard of rural living should be enhanced and stabilized, making the farmers more self-reliant and the farms of West Virginia more desirable homesteads.

Appendix

EXHIBIT A—Statistical analysis of farm business of 187 farms by types, Jackson Soil Conservation Area, 1936

Business factors	General	Beef	Dairy	Poultry	Self-sufficing	Part-time
Number farms	91	31	7	11	37	10
Total acreage in farms	16177	11055	1427	1986	2585	798
Percentage of all land	47.5	32.5	4.2	5.8	7.6	2.4
Acres per farm	178	357	204	181	70	80
Average total investment	\$7223	\$13098	\$10759	\$1780	\$1337	\$3586
Investment per acre	41	37	53	26	28	45
Value of land per acre	23	22	37	18	15	17
Percentage invested in land	49.7	56.1	52.6	37.6	47.2	40.1
Percentage invested in dwellings	16.1	10.4	8.1	26.7	21.8	32.6
Percentage invested in farm buildings	12.6	12.9	15.5	12.1	12.0	14.0
Percentage invested in livestock	15.8	17.5	16.0	17.1	15.7	8.8
Percentage invested in machinery	4.8	2.5	7.4	4.9	2.7	3.9
Percentage invested in other	1.0	.6	.4	1.6	.6	.6
Acres in crop land	39	52	40	41	16	12
Acres in open pasture	105	237	139	100	40	48
Acres in woods pasture	20	47	15	30	7	9
Acres in woodland	11	15	5	7	5	9
Percentage in crop land	21.9	14.5	19.6	22.7	22.8	15.0
Percentage in open pasture	58.9	66.4	68.1	55.6	57.2	60.0
Percentage in woods pasture	11.3	13.2	7.3	16.7	10.9	11.2
Percentage in woodland	6.2	4.2	2.5	3.8	7.1	11.2
Percentage in other	1.7	1.7	2.5	1.2	2.9	2.6
Acres in corn	7.8	8.4	11.3	8.8	5.0	2.3
Acres in wheat	4.8	6.5	1.7	5.0	1.5	.9
Acres in soybeans	1.4	2.1	4.4	2.5	.7	.5
Acres in oats	.8	1.2	3.4	3.1	.3	.3
Acres in mixed hay	20.2	32.2	17.0	18.5	6.9	6.2
Acres in alfalfa	1.2	.6	1.4	1.2	.1	.1
Acres in other crops	3.4	2.6	2.8	2.9	1.8	2.6
Percentage in row crops	22.9	17.3	30.1	23.4	34.8	25.1
Percentage in non-sod crops	18.1	19.3	22.7	26.6	15.6	11.3
Percentage in perennial hay	59.0	63.4	47.2	50.0	49.6	63.6

EXHIBIT A (cont.)—Statistical analysis of farm business of 187 farms by types, Jackson Soil Conservation Area, 1936

Business factors	General	Beef	Dairy	Poultry	Self-sufficing	Part-time
Crop yield index						
Yield of corn	65.1	68.1	88.9	60.1	48.6	41.9
Yield of wheat	36.4	39.0	39.0	34.0	27.2	18.4
Yield of oat hay	9.2	12.9	9.0	7.5	11.2	4.5
Yield of soybeans	.6	.5	1.1	.2	.8	..
Yield of mixed hay	1.1	1.4	1.5	1.1	.6	1.1
Yield of alfalfa	.6	.4	1.0	.6	.4	.5
	1.3	.4	..	1.0	..	..
Crop land per animal unit	1.9	1.2	1.6	2.9	2.7	2.1
Open pasture per animal unit	5.0	5.5	5.4	6.8	6.9	8.4
Woods pasture per animal unit	.9	1.1	.5	2.1	1.2	1.5
Acres fertilized per farm	7.0	9.9	3.5	8.0	1.64	3.8
Rate of application—lbs.	234	231	283	196	194	215
Acres limed per farm	3.1	2.9	9	1.5	..	1.8
Rate of application—tons	2.4	2.9	2.6	1.9	..	2.7
Acres manured per farm	4.7	10.8	11.3	4.9	2.5	1.8
Rate of application—tons	6.4	4.1	6.8	5.6	4.2	7.1
Crop sales—total	\$85.98	\$62.68	\$36.00	\$3.00	\$5.57	\$7.30
Percentage of corn sales	24.9	19.3	43.6	39.3	65.5	..
Percentage of wheat sales	6.7	17.7	17.8	..	..	..
Percentage of other crop sales	68.4	63.0	38.6	60.7	34.5	100.0
Animal units per farm						
Dairy cows	20.9	43.2	25.6	14.6	5.8	5.7
Beef cows	3.6	2.7	16.6	3.2	1.7	1.6
Dairy heifers	3.1	10.0	1.7	.6	.4	.5
Beef heifers	.5	.1	1.3	.5	.1	.2
Steers	.9	1.9	.1	.2	.1	.2
Hogs	4.0	18.8	.3	1.6	.5	.6
Sheep	.5	.5	.6	.5	.3	.3
Chickens	2.8	2.2	.6	1.7	.6	.6
Turkeys	1.5	1.3	.7	3.4	.6	.3
Horses	.2	.2	..	.4	.2	..
	2.2	2.7	1.9	1.8	1.1	.5
Value of livestock per farm	\$1140	\$2290	\$1736	\$816	\$305	\$317
Percentage in dairy	21.2	5.2	73.6	23.1	29.1	26.8
Percentage in beef	30.6	73.7	3.7	12.3	10.5	24.6
Percentage in sheep	8.8	3.2	1.2	6.1	6.3	6.0
Percentage in hogs	3.4	1.6	3.1	4.7	5.9	6.9
Percentage in poultry	8.4	3.4	3.4	26.9	12.4	15.1
Percentage in other	27.6	12.9	15.0	26.9	35.8	20.6

Business factors		General	Beef	Dairy	Poultry	Self-sufficing	Part-time
Livestock sales per farm		\$429	\$1604	\$461	\$381	\$92	\$124
Percentage in cows		13.0	8.6	44.4	5.2	19.5	23.3
Percentage in heifers		4.7	6.5	5.7	2.6	5.5	11.2
Percentage in steers		21.2	57.2	1.7	16.6	7.6	14.9
Percentage in hogs		6.8	1.8	12.0	4.9	7.6	3.0
Percentage in sheep		15.1	3.8	5.0	9.8	10.8	6.7
Percentage in poultry		16.4	4.4	6.5	52.7	31.6	17.9
Percentage in other		22.8	17.7	24.7	8.2	17.4	23.6
Prices received per head:							
Cows		\$38.47	\$45.17	\$55.19	\$36.33	\$38.29	\$58.00
Heifers		32.54	58.00	37.00	28.00	34.60	35.00
Steers		47.37	64.11	51.00	40.64	33.14	46.35
Calves		15.85	25.08	7.01	13.88	13.06	12.95
Pigs		4.34	4.74	7.53	4.00	3.70	4.00
Lambs		5.31	5.06	5.00	5.00	4.00	3.56
Chickens		.54	.50	.56	.60	.60	.56
Turkeys		1.99	2.48	2.00	2.34	2.42	2.33
Receipts livestock products		\$245	\$152	\$3057	\$501	\$62	\$52
Milk—percent		2.8		92.7			
Cream—percent		20.8	13.8	3.4	3.3	12.9	9.6
Butter—percent		.4	1.9		2	1.6	1.9
Eggs—percent		62.0	65.1	3.4	91.5	74.2	67.3
Wool—percent		11.1	17.2	.4	5.0	8.0	9.6
Other—percent		2.9	2.0	.1		3.3	11.6
Prices received for livestock products:							
Milk (gal.)		\$.18		\$.25			
Cream (lb. B. F.)		.36	.35	.44		.37	
Butter (lb.)		.24	.24		.26	.20	.20
Eggs (doz.)		.21	.22	.24	.21	.20	.21
Wool (lb.)		.38	.39	.37	.37	.37	.38
Miscellaneous receipts		38	17	27	12	15	10
Non-farm receipts		175	275	180	155	66	739
Cash farm receipts							
Percentage in crops		798.23	1835.61	3581.00	896.46	174.38	193.20
Percentage in livestock		10.7	3.4	1.0	.4	3.1	3.7
Percentage in livestock products		53.7	87.3	12.8	42.4	52.6	64.5
Percentage in miscellaneous		30.7	8.3	85.4	55.9	35.7	26.7
Percentage in miscellaneous products		4.9	1.0	.8	1.3	8.6	5.1

EXHIBIT A (cont.)—Statistical analysis of farm business of 187 farms by types, Jackson Soil Conservation Area, 1936

Business factors	General	Beef	Dairy	Poultry	Self-sufficing	Part-time
Cash farm expenses ¹	270.95	434.97	1415.86	339.46	97.08	209.40
Percentage of fertilizer and lime	9.1	12.1	1.8	6.3	3.8	12.6
Percentage of seed	9.6	10.4	5.2	6.5	7.7	8.6
Percentage of feed	35.7	37.1	62.5	62.3	51.7	43.1
Cash farm receipts	798	1835	3581	897	174	183
Increase in inventory	218	445	416	112	51	28
Total receipts	1016	2280	3997	1009	225	221
Current expenses	271	435	1416	340	97	209
Labor expense—hired	90	212	283	82	25	75
Labor expense—family	150	188	287	169	61	66
Decrease in inventory	53	240	9	69	20	53
Livestock purchased	165	509	312	81	32	45
Depreciation	107	136	182	81	26	72
Total expenses	785	1720	2489	822	261	520
Farm income	231	550	1508	187	—36	—299
Interest @ 5 %	368	559	550	240	97	178
Labor income	—137	—99	958	—53	—133	—477
Family labor	150	188	287	169	61	66
Family farm labor income	13	89	1245	116	—72	—411
Non-farm income	173	275	180	155	66	739
Perquisites ²	444	427	425	427	271	385
Operator's earnings	432	603	1563	529	204	647
Average investment	\$7362	\$13186	\$10994	\$4794	\$1947	\$3557
Farm income per acre	1.30	1.57	7.39	1.03	—51	—3.74
Farm income per animal unit	11.05	12.96	58.86	12.80	—6.20	—52.45
Farm income per crop acre	5.92	10.76	37.70	4.45	—2.25	—24.91
Farm income per pasture acre	2.20	2.36	10.34	1.87	—90	—6.23
Percentage of expenses to receipts	33.9	23.7	39.5	37.8	55.6	108.3
Percentage earned on investment	3.1	4.2	13.7	3.9	—1.8	—8.4
Percentage of receipts to average capital	10.8	13.9	32.5	18.6	8.9	5.4
Ratio of receipts to investment	3.2	7.2	3.1	5.4	11.2	18.4

¹Excluding labor.

²Includes value of food and shelter furnished by farm and farmstead.



